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The Am. Soc. C. E. Rail Section.

To the Editor of the Railroad Gazette:

And then, again, you say "the companies are not always getting the worth of the money put into the heavier sections in increased wear." It must

WM. G. RAYMOND.

Mr. Octave Chanute said one year ago in Chicago, white oak ties were quoted at 45 cents and cedar ties at 36 cents; now the price of white oak is 60 to 65

Use and Abuse of the Telegraph.⁹

* Abstract of a paper by W. W. Ryder, Superintendent of Telegraph of the Chicago, Burlington & Quincy, read before the St. Louis Railway Club at St. Louis, Mo., Oct. 13, 1899.

with an arbitrary sum, based on the estimated cost. The result is understood to be gratifying.

The use of "pink envelopes" has become quite general. This is a convenient device for messages filed after 4 p. m. which can be sent by train and promptly opened and answered the next morning. Even the pink envelope is abused, being used for letters which are not urgent.

To those who say that curtailing telegrams will cripple the business it should be answered that on the same principle one should refuse to put a curb on the issuance of supplies for fear there might be a shortage in an emergency.

Another abuse is the constant demand to have through wires connected with way stations. Every additional office on a wire makes it work harder.

Discussion.

Mr. Kinsman (Wabash): We have done all the things mentioned by Mr. Ryder, and some others, and still our wires are burdened. Messages get piled up 300 deep and important ones sometimes lie in such a heap five or six hours. The traffic department is the greatest offender. In one case a freight agent sent 13 Western Union messages, about a car of freight going to the Pacific Coast, and the road paid \$35 for them, while its gross income from that car was \$21. The messages simply asked each agent to personally rush that car along, which probably would have been done without the messages. Traffic officers are always willing to reduce messages what they can, but they do not seem to find a way to effect much saving. Local agents frequently send long messages to stations near by, even holding such messages two or three hours for a chance to send them, and meantime letting a passenger train go by which could have carried the message.

Mr. Cheney (Terminal RR.): There is much unnecessary answering of messages. An order for an extra passenger car on a regular passenger train requires the transmission of perhaps 30 words and the recipient is required to practically repeat the whole message in reply. Mr. Cheney thought that a central telegraph office for the general offices of railroads located in St. Louis would be an economy.

Train Accidents in the United States in September.

COLLISIONS.

Rear.

2d, on Lehigh Valley, at Phelps, N. Y., a passenger train ran into the rear of a preceding freight, and several freight cars were badly damaged. There was a dense fog at the time.

3d, 5 a. m., on Southern Pacific, at Lodi, Cal., a freight train ran over a misplaced switch and into some cars standing on a side track. Several cars were wrecked and were damaged by fire. The engineman was injured.

3d, 11 p. m., on Long Island road, in Brooklyn, N. Y., a passenger train standing at the station was run into at the rear by a following passenger train and eight passengers were injured, one of them probably fatally.

4th, on Louisville & Nashville, at Lily, Ky., a freight train ran into the rear of a preceding freight, wrecking the caboose and two cars. The fireman was fatally injured.

4th, 8 p. m., on Western Maryland, near Williamsport, Md., a freight train descending a grade broke in two and the rear portion afterward ran into the forward one, wrecking several cars. Two brakemen were injured.

6th, 4 a. m., on Erie road, at Miller's, Pa., westbound passenger train No. 5 ran over a misplaced switch and into the rear of a preceding freight train, making a bad wreck. It is said that the freight had been standing on the side track about 20 minutes and that the switch was undoubtedly left wrong by the rear brakeman of the freight. This man, the freight conductor, the passenger engineman and a tramp were killed.

6th, on Baltimore & Ohio, at Connellsville, Pa., a westbound express train ran into the rear of a preceding accommodation train. Many passengers were hurt, but none of them very seriously.

6th, on Norfolk & Western, near Williamson, W. Va., a freight train broke in two and the rear portion afterward ran into the forward one in the Dingess tunnel, wrecking 23 cars. Three trainmen and four tramps were killed.

11th, on Delaware, Lackawanna & Western, at Nayaug, Pa., a freight train ran into the rear of a preceding freight, and the caboose was wrecked. Two trainmen were killed and two others injured. It is said that the trains were on a steep ascending grade, but that the second train was running much faster than usual, the train being light and there being an engine at the rear as well as at the front.

13th, on Southern Pacific, at Famoso, Cal., a passenger train ran into the rear of a preceding freight train, badly damaging several cars. Three passengers and one engineman were killed and the fireman and a track walker were injured.

14th, on Philadelphia & Reading, near Bingen, Pa., an empty engine ran into the rear of a preceding freight train. The conductor on the empty engine jumped off and was killed.

15th, on Pennsylvania road, at Sterling Run, Pa., a freight train broke in two and the rear portion afterward ran into the forward one, badly damaging two cars. A brakeman was killed and two other trainmen were injured.

16th, 4 a. m., on Philadelphia & Reading, at Tabor, Pa., a freight train ascending a grade broke in two between the tender and first car, and the whole of the cars ran back down grade and into the head of a following freight. The engine and several cars were badly damaged and two trainmen were injured.

18th, on Northern Pacific, at Orting, Wash., a freight train ran into the rear of a preceding freight, damaging two engines and a caboose. There was a dense fog at the time. Four trainmen were injured.

19th, on Philadelphia & Reading, near Reading,

Pa., a freight train ran into the rear of a preceding freight, wrecking five cars; one trainman injured.

19th, on Southern Railway, near Telford, Tenn., a freight train broke in two and the rear portion afterward ran into the forward one, badly damaging 15 loaded cars. A tramp was killed.

20th, on Missouri, Kansas & Texas, near Denton, Tex., a freight train broke in two and the rear portion afterward ran into the forward one, wrecking several cars. A man in charge of a horse was killed.

21st, on Chicago, St. Paul, Minneapolis & Omaha, near Windom, Minn., a freight train drawn by two engines ran into the rear of a preceding freight, which had a pusher, and all three locomotives fell off a bridge into a river. One span of the bridge, 157 ft. long, was wrecked and 17 cars were derailed. Several of the cars at once took fire and were burned up. One engineman, two firemen and one trespasser went down with the wreck and were killed.

23d, 4 a. m., on Southern Railway, at Alston, S. C., a freight train descending a grade broke in two and the rear portion afterward ran into the forward one, wrecking several cars. One brakeman was killed.

23d, on Chicago & Alton, at Grain Valley, Mo., a freight train ran into the rear of a preceding freight, making a considerable wreck; engineman and fireman injured.

28th, on Delaware, Lackawanna & Western, at Stroudsburg, Pa., a freight train ran into the rear of a preceding freight, damaging several cars; one brakeman was killed and another injured. There was a dense fog at the time.

And 29 others on 19 roads, involving 2 passenger and 41 freight and other trains.

Butting.

1st, on Norfolk & Western, at Glade Spring, Va., a freight train ran over a misplaced switch and into the head of another freight train, badly damaging two engines, a dozen cars and a station building. One engineman was injured.

2d, on Philadelphia & Reading, near Lyons, Pa., butting collision of freight trains, wrecking four cars. An engineman was killed.

2d, on Chesapeake & Ohio, at Denton, Ky., butting collision of passenger trains, damaging both engines and one baggage car. Both enginemen were killed and two other trainmen were injured. The collision occurred nearly opposite the station, on a sharp curve. The eastbound train, No. 22, had the right of track and had stopped before the collision occurred. The westbound train, No. 23, should have entered the side track, but the engineman had forgotten his meeting order. The east bound train had passed beyond the block signal, at the station (which is between the switches), the intention being to go forward to the switch so that a brakeman could set it for the other train.

3d, on Alabama Great Southern, at Collinsville, Ala., butting collision between a local freight train and a through freight drawn by two engines. All of the engines and several cars were wrecked.

5th, on Missouri Pacific, near Sedalia, Mo., butting collision of freight trains, wrecking both engines and 20 cars, four of which were burnt up. Two trainmen were injured. It is said that the collision was due to incorrect meeting orders or to misunderstanding of orders.

7th, on Philadelphia & Reading, near Conshohocken, Pa., butting collision of freight trains, wrecking both engines and several cars. Five trainmen were injured.

10th, 1 a. m., on Pennsylvania road, near Tiona, Pa., butting collision of freight trains, both engines and 18 cars being wrecked. One engineman was killed and three other trainmen were injured. One of the trains disregarded a train-order signal which was set against it.

10th, on Pittsburgh, Cincinnati, Chicago & St. Louis, near Richmond, Ind., butting collision between passenger train No. 47 and an extra freight, making a bad wreck. The boilers of both locomotives exploded. The conductor and engineman of the freight forgot a meeting order. One brakeman was killed and six other trainmen and three passengers were injured.

12th, 1 a. m., on Chicago, Rock Island & Pacific, near Oxford, Ia., butting collision of freight trains, wrecking both engines and 12 cars. Two trainmen and two tramps were killed and three trainmen and three tramps were injured. A despatcher failed to deliver an order to one of the trains.

13th, on Southern Pacific, at Capitola, Cal., butting collision of freight trains, damaging both engines. One of the enginemen forgot a meeting order, though, it is said, he had had it in his mind only a few minutes before. This engineman was fatally scalded.

13th, on Pennsylvania road, near Baird, Pa., butting collision between a pay car train and a freight, due to a misunderstanding of orders. One engineman and one fireman were killed and four other employees were injured.

15th, on Southern Pacific, near Clark's, Nev., butting collision between a passenger train and an empty engine, badly damaging both engines and one car. Four trainmen were injured. It is said that the empty engine was on the main track without authority.

18th, 4 a. m., on Mobile & Ohio, near Lauderdale, Miss., butting collision of freight trains, wrecking both engines and several cars. A tramp was killed and nine trainmen were injured. The engineman of one of the trains forgot a meeting order.

19th, 4 a. m., on Missouri, Kansas & Texas, at Rhineland, Mo., butting collision of freight trains, wrecking both engines and seven cars. One engineman was killed and two other trainmen were injured. The eastbound train ran on the time of the other without authority.

19th, on Southern Railway, at Talbott, Tenn., collision of freight trains due to misreading a telegraphic order. One trainman was killed and three were injured.

20th, on St. Louis & San Francisco, near Swope Park, Mo., butting collision between a northbound passenger and a southbound freight train, making a bad wreck, both trains having been running at good speed. The baggage car caught fire from the engine and was burned up. Two enginemen, one fireman and one brakeman were killed and four trainmen were injured. The conductor and engineman of the freight forgot about the passenger train.

22d, on Allegheny Valley, at Parker, Pa., butting collision between a passenger train and a freight, wrecking both engines and several cars. Four passengers and four trainmen were slightly injured. The conductor and engineman of the freight were

running on the time of the passenger train, having overlooked the latter's schedule.

23d, on Denver & Rio Grande, at Reno, Col., collision between a special westbound passenger train and an eastbound freight, wrecking both engines and the first two cars of the passenger train. Five passengers and the manager of the excursion were killed and six passengers were injured. The conductor and engineman of the freight had forgotten a meeting order.

26th, 5 a. m., on New York Central & Hudson River, near Auburn, N. Y., butting collision between a westbound passenger and an eastbound freight train, wrecking both engines and several cars. One engineman, one fireman and one tramp were killed, and one engineman and the baggageman were fatally injured; four other trainmen were injured. The engineman of the freight seems to have forgotten about the passenger train, and the conductor was asleep.

26th, on Chicago & Northwestern, near Oskaloosa, Ia., butting collision between a passenger train and a freight, the latter drawn by two engines. All three engines and 14 cars were wrecked. Five trainmen were killed and three passengers were injured.

27th, 5 a. m., on Great Northern, near Paisley, Mont., butting collision between an eastbound freight train and a westbound empty engine, wrecking both engines and several cars. Four trainmen were killed and two others injured. The westbound engine was running on the time of the other train. The engineman left the last registering station without orders and without examining the train register.

30th, on New York Central & Hudson River, near Mulhollon, N. Y., butting collision between a northbound passenger train and a southbound freight, wrecking both engines, the baggage car and several freight cars. Six passengers and two trainmen were injured. The conductor and engineman of the freight (an Erie freight) forgot about the passenger train.

And 12 others on 11 roads, involving 3 passenger and 21 freight and other trains.

Crossing and Miscellaneous.

8th, at Slater, Ia., a freight train of the Chicago & Northwestern ran into a freight of the Chicago, Milwaukee & St. Paul at the crossing of the two roads. The station building was wrecked. One engineman was injured.

8th, on New York, New Haven & Hartford, at Holyoke, Mass., a freight train ran over a misplaced switch and into some freight cars standing on the side track, badly damaging the engine and one car. The engineman and a man stealing a ride were injured.

12th, on Baltimore & Ohio, at Shenandoah Junction, W. Va., nine cars and a caboose escaped from a freight train during switching operations and ran uncontrolled down a steep grade nine miles to Engle, and there collided with a local freight train. Ten cars were wrecked.

17th, 1 a. m., on Southern Pacific, at Oakland, Cal., collision between a passenger train and a train of empty passenger cars; one engineman and one fireman injured. There was a dense fog at the time.

18th, on Port Jervis, Monticello & New York, at Port Jervis, N. Y., collision between a passenger train and a switching engine; two passengers and one trainman injured. There was a dense fog and it is said that the flagman sent out to protect the switching engine did not go far enough.

18th, on Mobile & Ohio, near Dyer, Tenn., collision between a freight train and a work train, wrecking a caboose. Three employees were injured.

21st, on Western & Atlantic, at Smyrna, Ga., collision of freight trains; one brakeman killed.

22nd, on Southern Pacific, at Niles, Cal., a freight train which had been cut in two for the purpose of doing some work at a station was not properly controlled by the brakemen and a number of cars collided with the engine. The conductor was killed and a brakeman was injured.

22d, on Southern Pacific, at Santa Monica, Cal., collision between an excursion train and a switching freight train; three passengers and three trainmen injured.

24th, on Lake Shore & Michigan Southern, at 14th street, Chicago, collision between a suburban passenger train and a train of empty passenger cars. One engineman was killed and one fireman severely scalded.

25th, on Chesapeake & Ohio, near White Sulphur Springs, W. Va., passenger train No. 1 collided with a freight train standing on a side track, wrecking the express car and several freight cars. A tramp riding on the baggage car was killed and one passenger and seven trainmen were injured. It is said that the switch leading to the side track had been maliciously misplaced.

29th, 3 a. m., on Indiana, Decatur & Western, at Montezuma, Ind., collision between eastbound passenger train No. 4 and a freight train which was entering a side track. One passenger car was badly damaged and eight passengers were injured.

And 20 others on 14 roads, involving 6 passenger and 28 freight and other trains.

DERAILMENTS.

Defects of Road.

15th, on Kansas City, Ft. Scott & Memphis, near Creighton, Mo., several cars of a freight train broke through a bridge, which had been weakened by fire, and the cars and bridge were wrecked.

15th, on Missouri Pacific, at Paul, Neb., a freight train broke through a bridge which had been weakened by fire and the engine and 20 cars were wrecked. The wreck took fire and was mostly destroyed. The engineman, fireman and one brakeman were killed.

And 3 others on 3 roads, involving 3 freight trains.

Defects of Equipment.

1st, on Central of Georgia, near Opelika, Ala., the locomotive of a freight train was badly damaged by the breaking of a parallel rod and was overturned in the ditch. Several freight cars were derailed. The engineman and fireman were injured.

1st, on Central of Georgia, near Waverly, Ala., a freight train was derailed by a broken wheel and the engineman and fireman were injured.

9th, on Columbia, Newberry & Laurens Railroad, near Columbia, S. C., one of the cars in a train loaded with granite, broke down on a trestle bridge and knocked it down; and the engine and several cars fell about forty feet to the island below. The engineman, fireman and two tramps were killed. One trainman went down under a great mass of granite, but came out unhurt.

11th, on Lehigh Valley, at Avoca, Pa., a freight train moving at low speed broke in two and two cars were derailed by the automatic application of the air brakes. A brakeman was injured.

13th, on Pennsylvania road, at Bainbridge, Pa., a

freight train was derailed by a broken wheel and four cars fell into a canal. A brakeman was drowned.

14th, on Western Maryland, at Chambersburg, Pa., a freight train crossing a low trestle bridge broke apart between two cars on which rested a load of long steel rails. The rails fell to the floor of the bridge and knocked down about 30 ft. of it. Four cars fell to the ground below and were wrecked.

20th, on Southern Pacific, at Millbrae, Cal., passenger train No. 12 was derailed by a broken wheel; one passenger and two trainmen injured.

And 14 others on 8 roads, involving 1 passenger train and 13 freight and other trains.

Negligence in Operating.

7th, on Colorado & Southern, near Boreas, Colo., a freight train descending a steep grade became unmanageable, and the engine and 13 cars ran off the track at a curve and fell down a bank. The fireman was killed and the engineman injured.

30th, on Great Northern, near Minot, N. D., east-bound passenger train No. 4 was derailed at a misplaced switch and the engine and first three cars were ditched. The engineman and fireman were injured.

And 5 others on 5 roads, involving 5 freight trains.

Unforeseen Obstructions.

1st, 11 p. m., on Southern Pacific, near Arizola, A. T., a freight train was derailed by running over a cow, and the engine was ditched. The engineman was injured.

3rd, on Chicago & Northwestern, near Cedar Grove, Wis., a passenger train struck a carriage containing three men and instantly killed all of them. The bodies of the men derailed two cars of the train,

W. Va., a freight train was derailed and the fireman was killed.

13th, on Great Northern, near Harlem, Mont., passenger train No. 4 was derailed, and three passengers and three trainmen were injured.

17th, on Galveston, Harrisburg & San Antonio, at Alpine, Tex., a freight train was derailed and eight cars were wrecked. A tramp was killed and another injured.

20th, on Baltimore & Ohio, near Petroleum, W. Va., a passenger train was derailed and the engine fell down a bank. The engineman was killed and six other trainmen were injured.

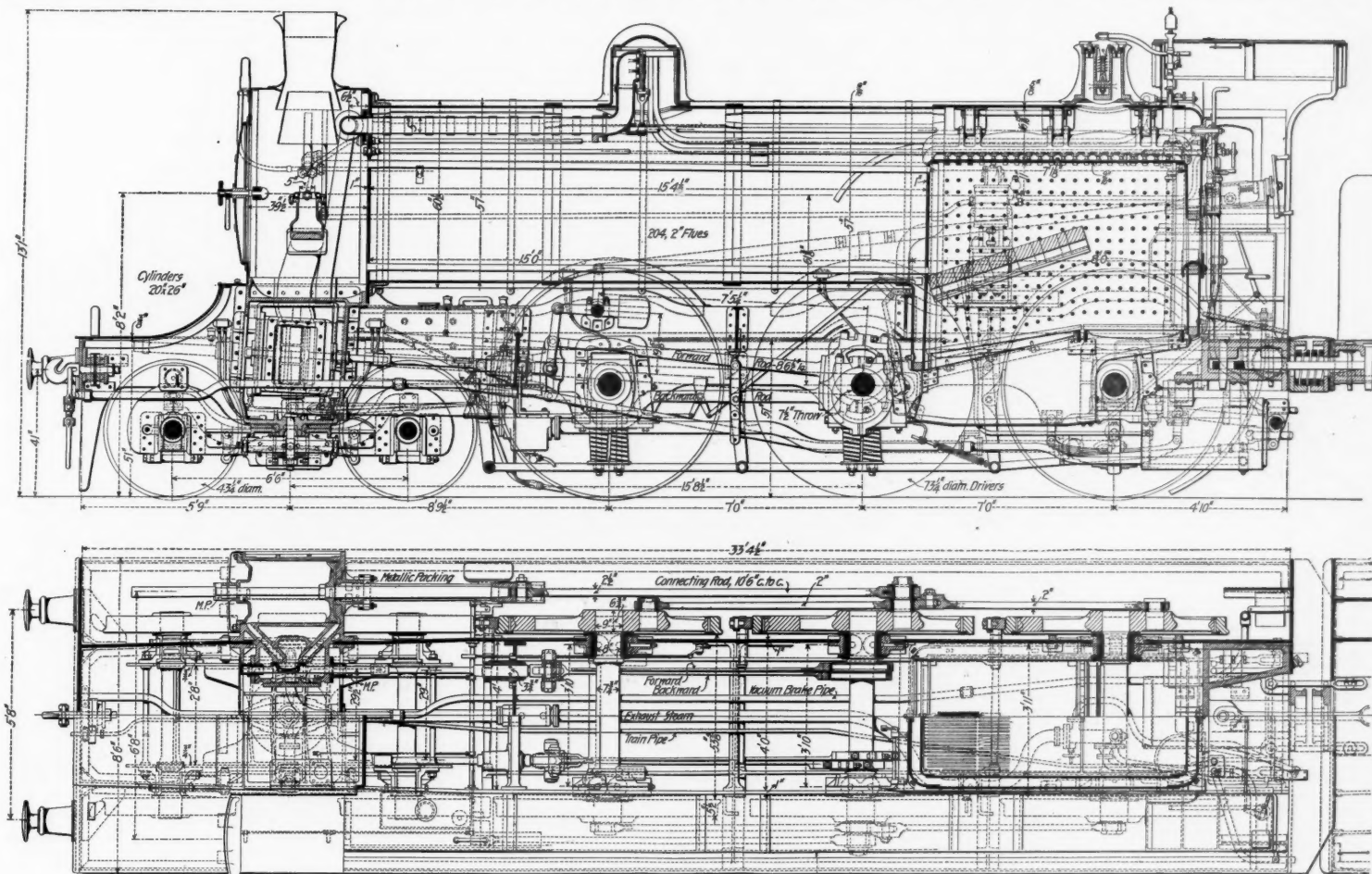
23rd, on Chicago & Alton, at Elkhart, Ill., a passenger train running at good speed was derailed, nearly opposite the station, and the engine and all of the 10 cars ran some distance on the sleepers. One passenger was killed and one injured. The derailment was reported as having been caused by a loose or broken rail, but the officers of the road are unable to find evidence of this. No rails were broken, but joints were loosened by the cutting off of bolts, presumably by the wheels of the derailed engine or cars. One rail, after being loosened at the joint, was turned upward, after the fashion of the "snake head" of early times, and penetrated the smoking car, which was the third from the engine; and the eight rails next forward of this one, making a strip 270 ft. long, remained attached to the first one; and as the car continued its forward motion the 270 ft. length penetrated the roof. It then turned downward, passing again through the car, and finally came to rest on the ground some distance back. The nine rails remained firmly fastened together after the train was stopped.

23rd, on Peoria, Decatur & Evansville, near Olney,

Ten-Wheel Express Locomotive for the North Eastern Railway, England.

In our issue of August 18 last, there were published a photograph and leading dimensions of a ten-wheel express locomotive built at the Gateshead shops of the North Eastern Railway, and through the courtesy of Mr. Wilson Wordsell, Locomotive Superintendent of that company, we now show the elevation and plan of the engine and a more complete list of dimensions. There was also given in our earlier issue a description of the line between York and Edinburgh, where the new locomotives will be used, together with the schedule of the trains hauled. It is only necessary now to say that the service is of the heaviest and fastest in England, the trains at times consisting of 20 loaded carriages, which run 124.5 miles at 53 miles an hour without stopping. The weight of these trains behind the tender varies from 390 to 420 net tons, and gradients of 1 in 96 for about 5 miles, and others of 1 in 150, 1 in 170, and 1 in 200 are met on different parts of the line. The new class of locomotive is designed to do away with double-heading.

This engine is notable for certain radical departures from English practice, such as large outside 20 x 26 in. cylinders with extended piston rods, six-coupled driving wheels 73½ in. in diameter, and a



Ten-Wheel Express Engine for the North Eastern Railway of England.

which was running at good speed. The cars were well loaded with passengers, but the personal injuries were all slight.

8th, on Perkiomen road, near Vera Cruz, Pa., a passenger train ran against a tree which had been blown down and had fallen across the track, and the rear car was ditched. The conductor and one brakeman were injured.

9th, on Brooklyn Elevated, at Sands street, Brooklyn, N. Y., the engine of a passenger train was derailed by a piece of iron which had accidentally fallen upon the track.

25th, on Lehigh Valley, at Redington, Pa., a passenger train was derailed by a landslide and the engineman and another man riding in the engine were injured.

And 7 others on 7 roads, involving 2 passenger and 5 freight and other trains.

Unexplained.

4th, on Northern Pacific, near Palmer, Wash., a freight train was derailed and the engine and several cars fell down a bank. Two trainmen were injured.

6th, on Norfolk & Western, near Narrows, Va., two passenger cars in an eastbound passenger train jumped the track while the train was running at high speed on a curve, and were overturned and fell down a bank. Two passengers were killed and 28 were injured.

7th, on Gulf, Colorado & Santa Fe, near Bellville, Tex., a freight train was derailed and the engine and several cars fell through a bridge. The engineman and fireman were injured, the latter fatally.

10th, 11 p. m., on Erie road, near Randolph, N. Y., a freight train was derailed and the fireman was killed.

12th, on Mobile & Ohio, at Bryden, Ill., a freight train was derailed, and the engine and five cars were wrecked. Two tramps were killed and a brakeman was injured.

12th, on Chesapeake & Ohio, at Big Bend Tunnel,

Ill., a gravel train was derailed and a brakeman was killed. The engineman and fireman were injured. A bridge was damaged.

23rd, on Missouri, Kansas & Texas, at Lockhart, Tex., a car in a freight train was derailed and a brakeman was injured.

28th, 3 a. m., on Wheeling & Lake Erie, near Run Junction, O., a freight train was derailed while running at good speed and seven cars were wrecked. A brakeman was fatally injured.

28th, on Cincinnati, Hamilton & Dayton, at Rocky Hill, O., a passenger train was derailed and the engineman was killed. The fireman was injured.

30th, on Chicago, Indianapolis & Louisville, at 82nd street, South Chicago, Ill., a freight train was derailed and the engine and four cars fell into the ditch. The fireman was scalded.

30th, on Great Northern, near Minneapolis, Minn., a car in a freight train was derailed and overturned. A drover in the caboose was injured.

30th, on Chesapeake & Ohio, at St. Albans, W. Va., a car in a freight train was derailed and overturned, and a brakeman was killed.

30th, on Sierra Railway of California, near Coopers-town, Cal., an empty engine running backward was derailed on a trestle and fell to the ravine 30 ft. below. Three trainmen were injured.

And 47 others on 31 roads, involving 7 passenger and 40 freight and other trains.

OTHER ACCIDENTS.

8th, on Chicago, Rock Island & Pacific, near Fairview, Kan., the locomotive of a freight train was wrecked by the explosion of its boiler, and the engineman, fireman and one brakeman were injured.

10th, on Brooklyn Elevated road, at Fifth avenue and First street, Brooklyn, N. Y., a car in a passenger train was nearly destroyed by fire and another one was considerably damaged. The fire was due to the burning of a fuse in the electric motor.

And 3 others on 3 roads, involving 3 passenger trains.

four-wheel leading truck, while the weight in working order is nearly 140,000 lbs. This weight is distributed as follows: On the front truck wheels, 36,176 lbs.; on the front drivers, 26,768 lbs.; on the middle drivers, 43,344 lbs., and on the rear drivers, 33,488 lbs. The driving wheel base is 14 ft.

The boiler is of steel with a barrel 15 ft. long and 57 in. outside diameter; the center line of the barrel is 8 ft. 2 in. above the rail. The tubes, 204 in number, are also steel, 2 in. diameter and 15 ft. 6½ in. long, and the firebox is copper 7 ft. 3½ in. long by 3 ft. 2½ in. wide, and fitted with a brick arch. The tube heating surface is 1,639 sq. ft., and the firebox heating surface 130 sq. ft., making a total heating surface of 1,769 sq. ft. The grate area is 23 sq. ft., and an exhaust nozzle 5 in. in diameter is used; the front of the smokebox is flush with the saddle casting.

The tender is of the six-wheel type, fitted with a water scoop, and weighs in working order 86,500 lbs., having a capacity sufficient for 3,700 gallons of water and 5 tons of coal.

The following are the principal general dimensions:

Type.....	10-wheel passenger
Name of operating road.....	North Eastern Ry. Gage.....
Weight on drivers, front.....	26,768 lbs.
" " " middle.....	43,344 lbs.
" " " rear.....	33,488 lbs.
" " truck wheels.....	36,176 lbs.
" " total.....	139,776 lbs.
" " tender loaded.....	86,500 lbs.

General Dimensions.

Wheel base, total, of engine.....	26 ft. ½ in.
" " driving.....	14 ft. 0 in.

Length over all, engine.....	33 ft. 4 1/2 in.
Height, center of boiler above rails.....	8 ft. 2 in.
" of stack.....	13 ft. 1 in.
Heating surface, firebox.....	130 sq. ft.
" tubes.....	1,639 sq. ft.
" total.....	1,769 sq. ft.
Grate area.....	23 sq. ft.

Material.....	Steel plates.
Distance between frames.....	4 ft. 0 in.
Thickness main frames.....	1 in.
Distance between bogie frames.....	2 ft. 8 in.
Thickness of bogie frames.....	3/4 in.

Wheels and Journals.	
Drivers, diameter.....	73 1/4 in.
Truck wheels, diameter.....	43 1/2 in.
Journals, steel driving axle, size.....	9 x 9 in.
" truck.....	6 x 9 in.
Main crank pin, size.....	5 x 5 in. and 3 1/2 x 5 1/2 in.
Crank pin, front and back drivers, size.....	4 1/2 x 3 in.

Cylinders.	
Cylinders, diameter.....	20 in.
Piston, stroke.....	26 in.
" rod, diameter.....	4 in.
Kind of piston rod packing.....	Metallic.
Main rod, length center to center.....	10 ft. 6 in.
Steam ports, length.....	18 in.
" width.....	1 1/2 in.
Exhaust ports, length.....	18 in.
" width.....	4 in.

Valves.	
Valves, kind of.....	"D" slide.
" greatest travel.....	1 1/2 in.
" outside lap or clearance.....	1 1/2 in.
" inside lap or clearance.....	1/2 in.
" lead in full gear.....	1/8 in.

Boiler.	
Boiler, type of.....	Straight.
" working steam pressure.....	300 lbs.
" material in barrel.....	Steel.
" thickness of material in barrel.....	5 in.
" outside diameter of barrel.....	57 in.
Seams, kind of horizontal.....	Butt joint.
" circumferential.....	Butt joint.

Material.	
Material in barrel.....	Steel.
Thickness of material in barrel.....	5 in.
Outside diameter of barrel.....	57 in.
Seams, kind of horizontal.....	Butt joint.
" circumferential.....	Butt joint.

Material.	
Material in barrel.....	Steel.
Thickness of material in barrel.....	5 in.
Outside diameter of barrel.....	57 in.
Seams, kind of horizontal.....	Butt joint.
" circumferential.....	Butt joint.

Material.	
Material in barrel.....	Steel.
Thickness of material in barrel.....	5 in.
Outside diameter of barrel.....	57 in.
Seams, kind of horizontal.....	Butt joint.
" circumferential.....	Butt joint.

Material.	
Material in barrel.....	Steel.
Thickness of material in barrel.....	5 in.
Outside diameter of barrel.....	57 in.
Seams, kind of horizontal.....	Butt joint.
" circumferential.....	Butt joint.

Material.	
Material in barrel.....	Steel.
Thickness of material in barrel.....	5 in.
Outside diameter of barrel.....	57 in.
Seams, kind of horizontal.....	Butt joint.
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" circumferential.....	Butt joint.

Chicago Transfer & Clearing Company.

This is the title of the company incorporated in Delaware (June 23, p. 457) with a capital stock of \$4,000,000 which is to own and develop the "Stickney tract," the site of the proposed great freight transfer station at Chicago. The principal capitalists interested are H. H. Porter, Chairman of the Chicago &

Eastern Illinois; D. O. Mills, of New York; Robert Benson & Co., London. The estate of the late Roswell P. Flower holds a portion of the stock. The offices of the company are in the Ellsworth Building, Chicago, and Mr. Edwin W. Winter, formerly General Manager of the Chicago, St. Paul, Minneapolis & Omaha and later President of the Northern Pacific, has been made President, and Mr. C. W. Hotchkiss, formerly with the Chicago Junction Railway, is the Chief Engineer. The new company has already taken over the real estate of the three original companies, namely, the Stickney Warehouse Company, Ltd., the Chicago Union Transfer Company and the Chicago National Stock Yards Company, all lands being acquired on the basis of \$500 an acre. Several smaller tracts of land have also been bought, notably a strip of about 400 acres which, with the exception of one small break, connects the main tract with the Drainage Channel and gives a considerable frontage along the Canal. In all, title has been formally taken to 1,314 acres, the consideration being \$680,585 in money and securities, and the new company now holds, or shortly will hold, the title to all the land needed.

The "Stickney tract," so-called, is about ten miles southwest from the business center of Chicago, and is about three miles west from Sixty-seventh Street Station on the Grand Trunk. It lies within the area bounded by Fifty-first Street on the north, Harlem Avenue on the west, Seventy-ninth Street on the south and Hyman Avenue on the east. It has been

the new conditions at the passenger station. This raising of the grade amounts to about four inches at the draw span and increases to about four feet at the westerly end of the bridge.

The new bridge, shown in elevation in Fig. 1, will consist of four through riveted lattice fixed spans, each 181 ft. 6 in. centre to centre of end pins, and one riveted lattice draw span (operated by electric motors) 269 ft. 1 in. centre to centre of end pins, over the Hudson River; seven through plate-girder spans, each 70 ft. 3 in. centre to centre of bearings, over the Albany Basin, and one through plate girder, with solid trough floor, 113 ft. 6 in. centre to centre of bearings, over Quay Street and the Delaware & Hudson Canal Company's Railroad; and a solid floor deck plate girder viaduct on columns over Maiden Lane. The new structure will weigh approximately 3,700 tons.

For the purpose of avoiding crossings at grade of passengers and baggage at the new passenger station, and to eliminate grade crossings at Spencer and Livingstone Streets beyond the station, and also to remove the objectionable "dip" in the tracks between the passenger station and Broadway, the grade of the tracks is to be raised from the draw span of the Hudson River passenger bridge westerly to Broadway, a distance of 4,440 ft. and varying in height from a few inches to eleven feet. This work necessitates the construction of extensive retaining walls and abutments, bridges, filling and the re-arrangement of tracks.

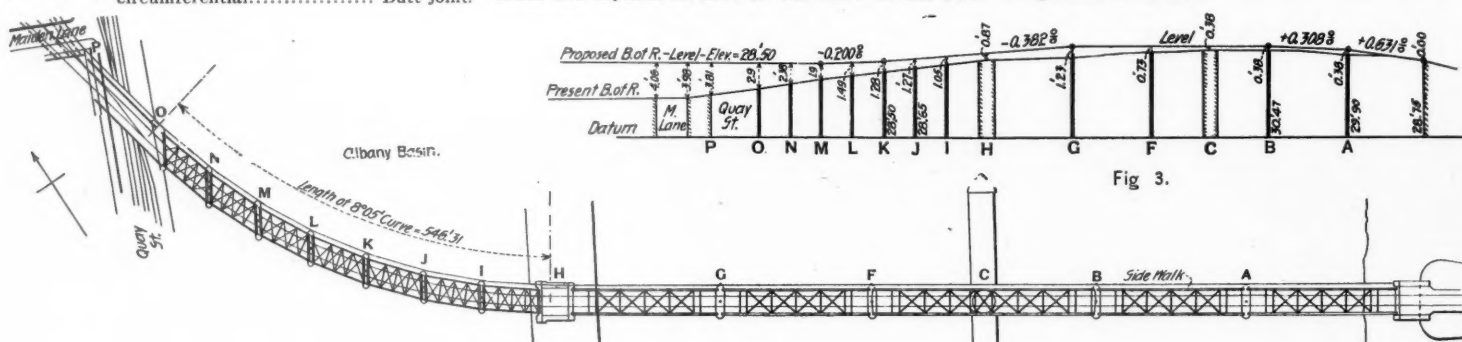


Fig. 1.

New Hudson River Bridge at Albany—N. Y. C. & H. R. RR.

Fig. 1, Elevation; Fig. 2, Plan; Fig. 3, Profile.

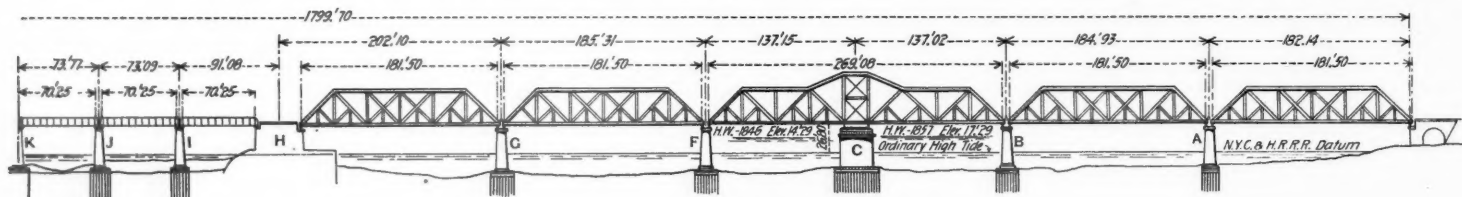


Fig. 2.

marked on the maps for several years, or since Mr. Stickney of the Chicago Great Western started the project of establishing a great transfer station. The first plan was to lay tracks on the circumference of a circle, one mile in diameter, from which numerous outlying yards were reached, the whole system being connected to all the railroads entering Chicago by the belt and other transfer lines. The arrangement of the new yards, however, will probably be quite different, and the engineers are now making a preparatory study of recent freight yards in different parts of the country. Other features will be large warehouses for providing storage room for the wholesale merchants of Chicago, and machinery for transferring various kinds of bulk freight, such as coal, grain, etc. Doubtless the appliances and methods for handling freight will be among the most interesting features of this work. So far the plans are hardly started, but it is expected that these will be finished in time to commence building early in the spring, the intention being to push the work as rapidly as possible.

New York Central Improvements at Albany.

The new passenger station now being built by the New York Central & Hudson River, at Albany, N. Y., was described in the Railroad Gazette of Dec. 16, 1898, page 890. In addition to the station the improvements include the re-construction of the Hudson River passenger bridge and the elevation of all the tracks for some distance on the west side of the river. We give herewith some account of the bridge.

The present double track Hudson River bridge now used for passenger trains was erected in 1872 by Clark Reeves & Co., and consists of twelve pin-connected through fixed spans and a plate girder viaduct on columns, and one draw span, aggregating 1,800 ft. in length. The increased weight of locomotives and rolling stock have rendered necessary the replacing of the old structure with a modern bridge. This will be located substantially upon the existing alignment and with the same span lengths, but with the base of the rails elevated from the draw span westerly, so as to be in harmony with

The passenger station, which is to be one of the finest in the country, is constructed of Milford pink granite.

All of the above work is now in progress, and it is expected that all will be completed by June 1, 1900.

The Contractors are A. & P. Roberts Co. (Pencoyd Iron Works) for the superstructure of the Hudson River Bridge, the Union Bridge Co. for the superstructure of the passenger and baggage subways and street crossings, Dwyer & Huntington of Buffalo for the masonry, and Norcross Brothers of Worcester, Mass., for the passenger station. The total cost of the work will approximate one million dollars and involves the use of 22,000 cubic yards of masonry of various classes, 120,000 cubic yards of filling, and 5,300 tons of steel.

Chief Engineer W. J. Wilgus has given us the following brief description of the method in which the tracks on the bridge have been raised.

The first work done was the erection of false-work under all of the fixed spans of the Hudson River Bridge, consisting of timber bents resting on piles. A special pile driver was built by the contractors, A. & P. Roberts Company, low enough to float under the bridge. The draw span was necessarily left unimpeded for the passage of the river traffic, and will not be rebuilt until the close of navigation. The two shore spans at Quay Street and Maiden Lane were temporarily supported on timber bents. After the completion of the false-work the floor of the old bridge was blocked and supported thereon, and the raising of both tracks was started, beginning at the west end of the bridge. The Maiden Lane span was raised first a small amount by means of hydraulic jacks placed under the end pins, raising the adjacent spans and shore approach simultaneously enough to give easy grades. This method was followed until all the spans were raised to the new grade and blocked up on the false-work. The construction of the false-work was started June 6, 1899; the raising of the bridge was started July 23 and finished August 9.

The southerly end of the Albany passenger yard begins at the northerly end of the Maiden Lane span, and the work of elevating this yard was begun at

the same time as the work on the bridge. The tracks farthest from the station were raised first to the new grade on sand filling, and each track toward the station was partially raised by steps so that the entire yard was on an inclined plane. The raising of the platform directly in front of the station and the tracks adjacent thereto was undertaken on Sunday, September 10, the temporary platforms, steps, etc., having been framed in advance, including the stairways leading to the exits, waiting-rooms and restaurant. All the work of raising the tracks at the station and on the bridge was done without interruption of traffic, without the use of temporary tracks, and without accident or delays.

In connection with the new superstructure for the bridge across the river radical repairs have been made to a portion of the masonry substructure. This work has been carried on without interruption of the regular traffic across the bridge.

The Central is making another improvement of considerable consequence near Albany. At Hoffman, 26 miles west of Albany, the freight tracks of the main line of the New York Central are being connected with the West Shore (at Rotterdam Junction) so as to facilitate the passage of through trains from one road to the other. The two freight tracks

overlap we have only home or stop signals, one at the entrance of each block. To insure safety, a train entering block C D does not clear the signal at the entrance of block B C until its rear end has passed some distance beyond the outgoing end of block B C. In the other plan, which is that used in the Union electro-pneumatic block signaling, each home signal, at the entrance of a block, has below it, on the same post, a distant signal, which repeats the indication of the home signal at the entrance of the next succeeding block.

The overlap method is not satisfactory because, although it theoretically makes it safe for a train to pass a home signal which is in the stop position, the rules do not permit an engineman to pass such a signal, and, consequently, trains cannot run at full speed. If the view of a signal is short, or if there is a fog or other obstruction to the view, the speed must be slackened. The plan of having a home and a distant arm on the same post is safe, but it is unnecessarily complicated.

To meet these faults or difficulties, Mr. Rhea proposes a single post, with a single arm, at the entrance of each block section, with apparatus to fix the arm in three different positions. The reader will remember that the use of three-position sema-

Electric Railroad Building in England.

The electrical equipment of the experimental section of the Metropolitan and the Metropolitan District underground lines between Earl's Court and Kensington is now nearing completion. It has been stated in certain American journals recently that all the lines worked by these two companies are being equipped with electricity. Such is not the case, however. The working of the power plant and rolling stock put in will be very carefully examined by Sir J. Wolfe Barry and Sir W. H. Preece, the advising experts, but it is not thought that they will now recommend equipping the entire lines of the two companies.

Sir W. H. Preece and Major Cardew have been retained by the Mersey Railway Company to report on the adoption of electricity on that line, but the Board of Directors announce that "the working of such an undertaking by electricity is novel, and the step would be attended with such important consequences that the fullest consideration is absolutely necessary;" so that although the question has occupied the Board's attention for some years past, there is to be no undue haste in bringing about a change.

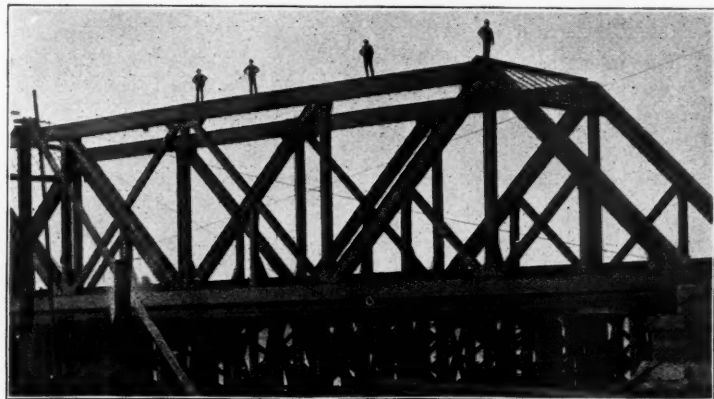


Fig. 4.—New East Shore Span.

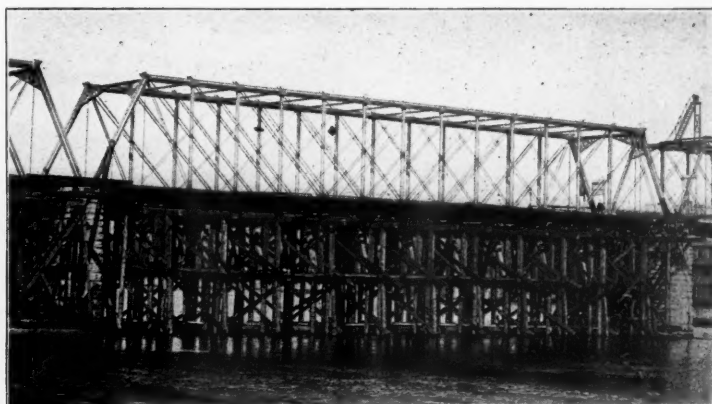


Fig. 5.—Old Bridge, First Span West of Draw.



Fig. 6.—West Portal, Old Bridge.

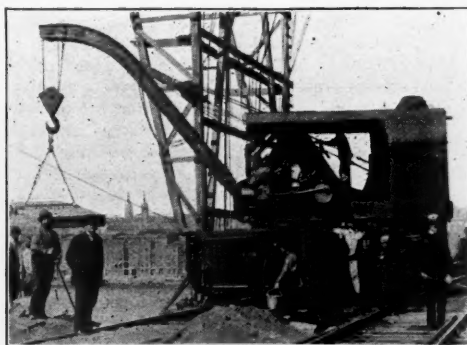


Fig. 7.—Steam Wrecking Crane at Work on East Abutment.
Renewal of Railroad (Passenger) Bridge Over Hudson River at Albany, N. Y.



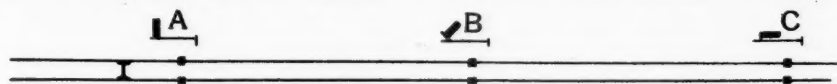
Fig. 8.—East Portal, Old Bridge.

of the New York Central being at the northerly side of the passenger tracks, the connection (double track) leaves these by diverging to the left and then is carried over the four main tracks by a plate girder bridge of 100 ft. span to a connection with the West Shore which is on the south side, across the Mohawk river. The length of the new connection is 1½ miles. This work is nearly finished.

Three-Position Signals.*

By Frank Rhea.

The American Railway Association recognizes the use of a semaphore to give three indications; but only in manual block signaling. In electrically controlled signals, and automatic block signals, as well as in interlocking signals, only two positions



of the arm are recognized by the Association. This, however, indicates, in the opinion of Mr. Rhea, not a scientific distinction, but merely that the rules were made to conform to existing practice.

In automatic signaling we have two systems, the overlap and the "home and distant." With the

phores is common on Mr. Rhea's road, the Pittsburgh, Cincinnati, Chicago & St. Louis.

With his arrangement the single arm of the signal would indicate, when horizontal, stop; when inclined 45 deg., caution; and when vertical, all clear; the intermediate or caution position (B, Fig. 1) would indicate that the block B C was clear, but that the signal at the entrance of the next section beyond (C) would be found in the stop position. The arm in the vertical position, as at A, would show not only that the block A B was clear, but that the signal at the entrance to the next block beyond (B) was also either in the clear or caution position; that is, would not require the train to stop at B.

The three-position signal with a single arm would cost less to put up than the two arms now used in the automatic block system, and would cost only

slightly more than the arrangement with the overlap. Maintenance would probably be cheaper than either of the plans now in use. By using one arm instead of two, there is a saving of \$12 a year in labor and oil (for lamps) for each arm dispensed with.

The three-position signal is also suitable for interlocking. Where there are diverging tracks the caution position of the upper arm can take the place of a separate lower arm.

The past month has seen considerable progress in electric roads. The London authorities, which have hung so far behind all other important places, have at last moved, and the preliminary work is on an extensive scale. In the several schemes adopted three different methods of electrical traction are to be used. Where the trolley is not considered admissible, a short experimental surface contact system and another worked by underground conduit method are to be put down, and plans, etc., are now being prepared in the hands of Professor Kennedy, the electrical expert to the London County Council. But a much larger scheme is also on foot. There are to be a number of miles of overhead trolley lines on suburban roads, while for others the underground conduit system is to be used. The scheme just considered involves an immediate outlay of about \$4,000,000, and in a few weeks the Council will probably be ready to let contracts for the various works. Professor Kennedy estimated that the conduit lines would cost \$75,000 per mile of single track, and the trolley lines \$60,000 per mile of single track. The comparatively high figure for the latter is due in part to a special form of overhead line work and poles.

In the provinces, we may refer to a very large undertaking for which the Manchester Corporation will be placing contracts shortly. The scheme includes many miles of trolley lines, and the estimated cost is \$1,250,000 for the reconstruction of the permanent way; \$750,000 for overhead equipment; \$1,800,000 for 600 cars; \$500,000 for land, car sheds and other ex-

* Abstract of a paper to be read at the meeting of the Railway Signaling Club in Boston, Nov. 14.
Papers by Mr. Sperry and Mr. Wilson, to be read at this meeting, were published in the Railroad Gazette of Nov. 3.

penses. This is only a part of the amount to be ultimately spent. The Liverpool Corporation is proceeding with an electrical scheme similar to that of Manchester, and last week it placed a contract for 200 cars at \$2,625 each with Messrs. Dick, Kerr & Co. The lines in Nottingham, Huddersfield, Oldham, and other roads are also in the market.

Electro-Pneumatic Interlocking at the Boston Southern Station.*

By J. P. Coleman.

Compressors, Piping and Reservoirs.

The air compressors supplying this interlocking with operating power are two Ingersoll-Sergeant piston-inlet machines, each having a capacity of 382 cu. ft. of free air per minute at a maximum speed of 120 revolutions. The steam end of each compres-

chines when their air cylinders and receiving tanks are under full pressure.

From these tanks, which, with the compressors, are located in the Terminal power house, a 3 in. air main extends to the limits of the interlocking. From this main, 2 in. branches extend in convenient lines and from them ¾ in. pipes run to each switch and signal. At each switch and at each signal there is a small auxiliary reservoir for collecting such moisture and sediment as may be contained in the pipes and carried along by the air. This insures clean, dry air for each operating mechanism. The valves of switch movements are connected with these reservoirs by means of armored hose, that no pipe joints may be subjected to strains resulting from track surfacing and alignment, or from vibrations due to trains passing over the switches.

After leaving the receiving tanks at the compressors and before passing into the service main, the air is passed through a group of manifold pipes of

design. This presents several advantages, chief of which are the compact and light construction resulting, and the complete enclosure of all moving parts within the post, secure from weather influences. This dependence upon a spring alone to return a signal to danger conflicts with a well established principle that declares gravity to be the one power available for performing this duty safely. While there is no denying the logic of this declaration in the abstract, its significance is, nevertheless, lost when applied to this signal, operating as a part of a system that provides a positive means of detecting failures of the signal to return to danger—a peculiarity of the electro-pneumatic interlocking system. Carried by the signal cylinder, but insulated therefrom, is a metal plate, which, when the signal is at danger, closes a circuit by resting against two contact springs suitably secured to the base of the signal. This circuit extends to the interlocking machine where it actuates an electric lock

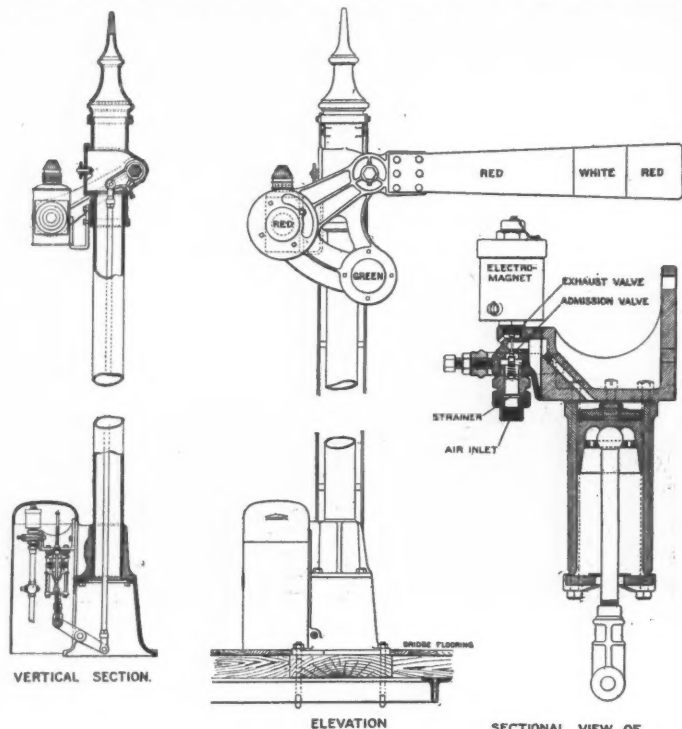


Fig. 7.—Electro-Pneumatic Semaphore, Signal Cylinder and Valve.

sor has a cylinder 14 in. dia. x 18 in. stroke, controlled by a double slide valve with the Meyer adjustable cut off.

The air cylinder is of 14¼ in. dia. and 18 in. stroke, and is jacketed at sides and ends for water circulation, to reduce the effects of heat resulting from the air's compression. The intake valves are formed in the piston head of the air cylinder and open and close by their own momentum at the ends of the piston's stroke, the air supply being drawn in through a hollow piston extending through the piston head into the atmosphere or into a suitable duct connected therewith. The interior of the hollow piston is thus always full of air at atmospheric pressure ready to be delivered through the valves at the instant of opening. These valves are of large areas, and from their method of operation offer practically no resistance to the inflow of air at full atmospheric pressure to the cylinder—thus insuring an economy of capacity impossible in machines of equal cylinder dimensions and piston speeds, that employ intake valves of the common, spring-check variety.

But one of these machines is run at a time, alternation from one to the other being made daily. The maximum speed of the compressor is never called for in ordinary service—40 revolutions per minute (¾ the maximum) being ample to maintain the pressure during the busiest hours of traffic. The wisdom of providing compressors of large reserve capacity at such places is evident, and the advantages numerous, chief of which is the means afforded for quickly restoring pressure in the reservoirs and main pipe in the event of accidents causing unusual losses. The slow speed at which the machines are run materially facilitates inspection, oiling and wiping, and reduces heating and wear.

Each compressor is provided with a receiving tank with a safety valve, and is further provided with an ingenious "unloading" device, by means of which the work of compression may be started after the compressor has been running for some time, and is "warmed up" to its work, or it may be temporarily or permanently suspended instantly and irrespective of the speed of the machine, if desired. These features are material advantages in starting the ma-

great surface area, exposed to the outdoor atmosphere. The effect of this is to radiate the heat generated during compression and to precipitate most of the moisture held in suspension by the air at a point convenient for periodical discharge, by means of a blow-off provided in the condenser chamber.

Owing to the great differences in the amounts of energy required to move signals and switches of the several types frequently found in the same interlocking system, cylinders of varying diameters and strokes are employed where one pressure is used for the operation of all. This is a simple and more satisfactory plan than to use cylinders of uniform dimensions and reducing valves, where needed, to give to each the pressure required to meet its load.

These several cylinders, their functions and their capacities in compressed and in free air are given below:

Operating Cylinders.

For	Diameter.	Stroke.	Piston area, Sq. in.	Contents of cylinder (air at 90 lbs.), Cu. in.	Equivalent in free air to, Cu. ft.
Dwarf Signals.....	3 in.	2 in.	7.07	14.14	.067
High Signals.....	3 in.	4 in.	7.07	28.28	.115
Simple Switch.....	5 in.	8 in.	19.64	157.12	.636
Double Slip end, no frogs.....	6 in.	8 in.	28.17	226.16	.916
Double Slip end, with frogs.....	6½ in.	8 in.	33.18	265.44	1.07

Signal Mechanisms.

The cylinders operating dwarf signals are movable, their pistons being stationary, and their piston rods being hollow, to serve as ports for the admission and discharge of air to and from the cylinders. They are also direct acting, being connected directly with the semaphore shaft through the interior of the post. The lamp of this signal is mounted on top of the post and central with it; the semaphore and back light castings are of malleable iron, and the blade is of rubber composition. These features minimize the risk of damage to the signal by contact with projections on passing trains, and lessen to some extent the expense of repairing signals so injured.

Instead of the cumbersome counterweight and supporting lever formerly employed for returning the pneumatic dwarf signal to danger, or for retaining it in that position normally, a stout coil spring surrounding the operating rod is substituted in this

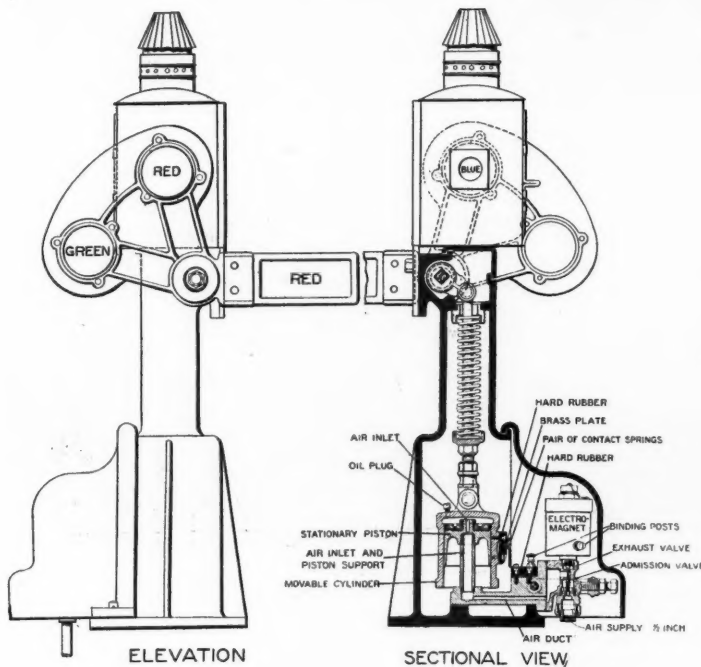


Fig. 9.—Electro-Pneumatic Dwarf Semaphore.

engaging the lever operating the signal. When moved to safety, the signal opens this lock circuit and electrically locks the lever from being moved completely back to normal. It may be partly so moved, however, the effect of which is to cause the pressure to be released from the signal cylinder and to thus enable the spring to move it to danger. The lock circuit being thus completed, the lever may be

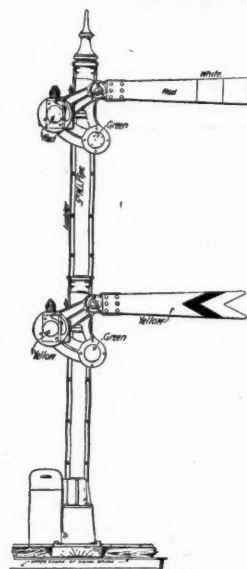


Fig. 8.—Two-Arm Signal on Bridge.

placed normal, which act releases the switches governed by the signal and enables a change of route to be effected. Should the spring fail to restore the signal to danger, the signal lever is, in effect, locked at safety until the defect in the signal is remedied; hence the use of the spring is not a serious objection when used in this system.

The "high" signal is of such dimensions and is so located with relation to tracks, that the use of a return spring is not sufficiently advantageous to warrant adoption in this type. Instead the spectacles and back light castings are made unusually heavy, and the internal operating rods are made of

*A general plan of the tracks at the new South Station in Boston was published in the Railroad Gazette of May 12, 1899, and the description of the interlocking which was begun in that article was continued in the issue of July 21. Both these articles were accompanied by insets.

solid 1½ in. round iron instead of the 1 in. pipe heretofore customary. The combined weights of these, acting to hold the signal at danger, is considered ample to return the signal to danger notwithstanding the retarding influences of wind and ice upon

are placed at the base of the post; their pistons being of the dash-pot variety and supplied with metal packing. This packing practically eliminates piston friction. Metal packing, while practically eliminating piston friction must, to do so, be fitted somewhat

found to be 43.03 miles an hour. In classifying the trains Mr. Pattinson excludes all where the runs are less than 10 miles long, and all trains which do not travel as fast as 40 miles an hour between stations (from start to stop). In applying this limit the ar-

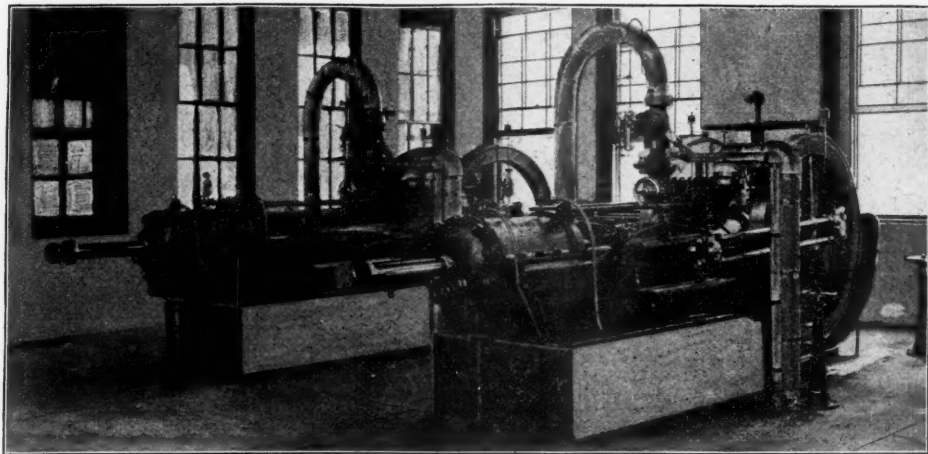


Fig. 1.—Air Compressors.

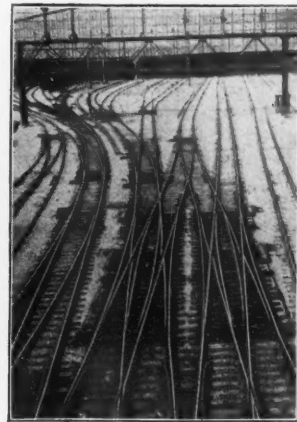


Fig. 5.—Looking North from Bridge No. 6.

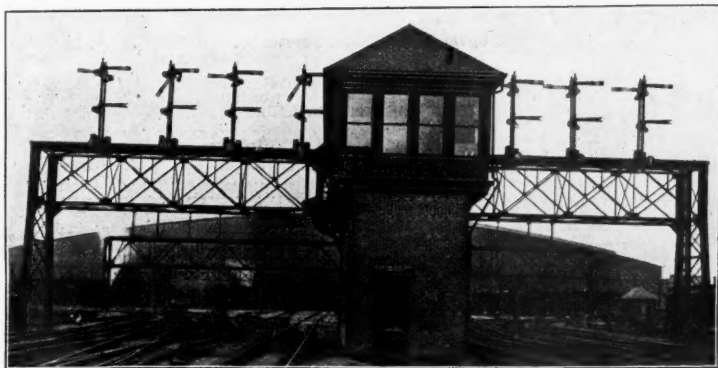


Fig. 3.—Signal Bridge No. 6.

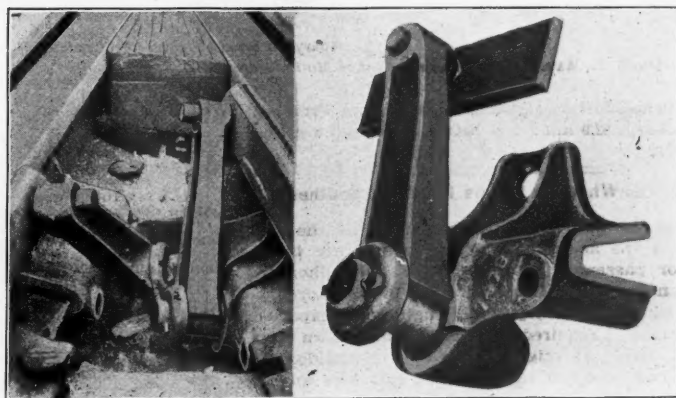


Fig. 4.—Detector-Bar Clips.

Electro-Pneumatic Interlocking at New South Terminal Station, Boston.

Made by the UNION SWITCH & SIGNAL COMPANY, Swissvale, Pa.

the signal blade and bearings occasionally met with.

While these signals are also equipped with circuit breakers for controlling their operating levers, and might, when operated under the electro-pneumatic system, be provided with lighter counterweights than those employed (thus permitting their operation by smaller cylinders), they are not infrequently used for automatic block service, where precautions for detecting failures of the signals are impracticable of simple solution, and where heavy counter-

weights are placed at the base of the post; their pistons being of the dash-pot variety and supplied with metal packing. This packing practically eliminates piston friction. Metal packing, while practically eliminating piston friction must, to do so, be fitted somewhat

Recent developments in the electro-pneumatic system have modified the magnetic pin-valve in one or two important particulars. The magnet is made smaller and of higher resistance than heretofore, and the present design has proved by repeated tests to give the greatest magnetic energy possible for the iron and copper employed in its construction. So marked is the improvement in this magnet and in the construction of the pin valve that in a number of instances the old style of valve and magnet, the magnet of 16 ohms resistance, has been supplanted by the new style (magnets wound eight times higher in resistance) without any increase in battery potential.

Two important changes have been made in the design of the magnetic valve. First, the lower end of the pin valve is no longer guided by the plug, but by a spirally wound coil spring upon which it rests and to which it is secured. Thus it is free to align itself to its seat. Second, the armature and stem are smaller and lighter, and the weights of both are supported by a flat disk-like spring formed in the magnet head under the armature. Any impediment preventing the closing of the lower or pressure valve when the magnet is de-energized does not incur any likelihood of the exhaust valve failing to give free exit to all pressure within the cylinder. These advantages, and that resulting from the use of metal packing, have made a marked change for the better in the record of the signal's behavior both in automatic and non-automatic service, and they have, with the assistance of numerous improvements in the method of securing the several parts of the signal's mechanism, made the problem of maintaining them in good repair an extremely simple task.

[TO BE CONTINUED.]

Census of German Express Trains.

Mr. J. P. Pattinson has made a census of all the express trains running in the German Empire, taking his data from the Government time-table book for the month of April, 1899. The principal object aimed at was to make an estimate of the speed of these trains, as a whole, and the average is

giving time of a train, where none is given in the time-table, is assumed to be one minute before the leaving time. The averages of the different states are given separately as follows: Prussia, 43.19; Alsace-Lorraine, 42.77; Bavaria, 41.89; Wurtemberg, 41.32; Baden, 43.76, and Saxony, 41.29. Various independent roads, none of which have trains running over 45 miles an hour, average from 40.91 to 41.83. The total number of runs forming the basis of the computation was 1,163, of which 835 were in Prussia. Of these 835 runs, 713 were 40 to 45 miles an hour; 118 from 45 to 50 miles and hour, and four over 50 miles. These classifications are made on the basis of time from start to stop, as before intimated, but

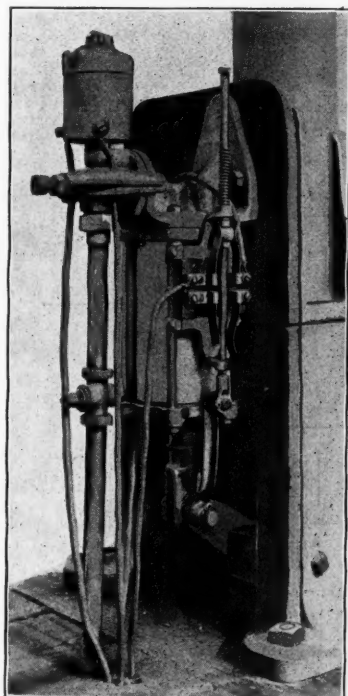


Fig. 6.—Signal Movement on Bridge.

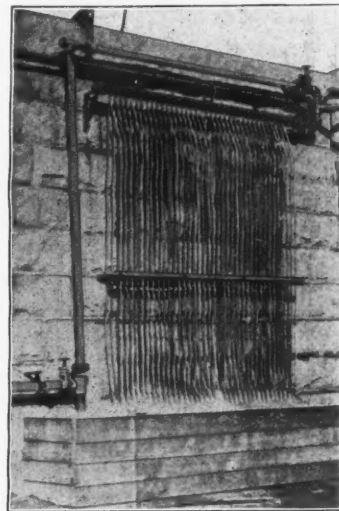


Fig. 2.—Cooling Pipes.

weights and an excess of cylinder capacity are important factors in the elimination of these occurrences. For uniformity's sake, therefore, no distinction is made between the mechanism of an automatic signal and that of an interlocking signal, and the small energy required to work either warrants this adherence to one type for both services.

The cylinders employed to operate "high" signals

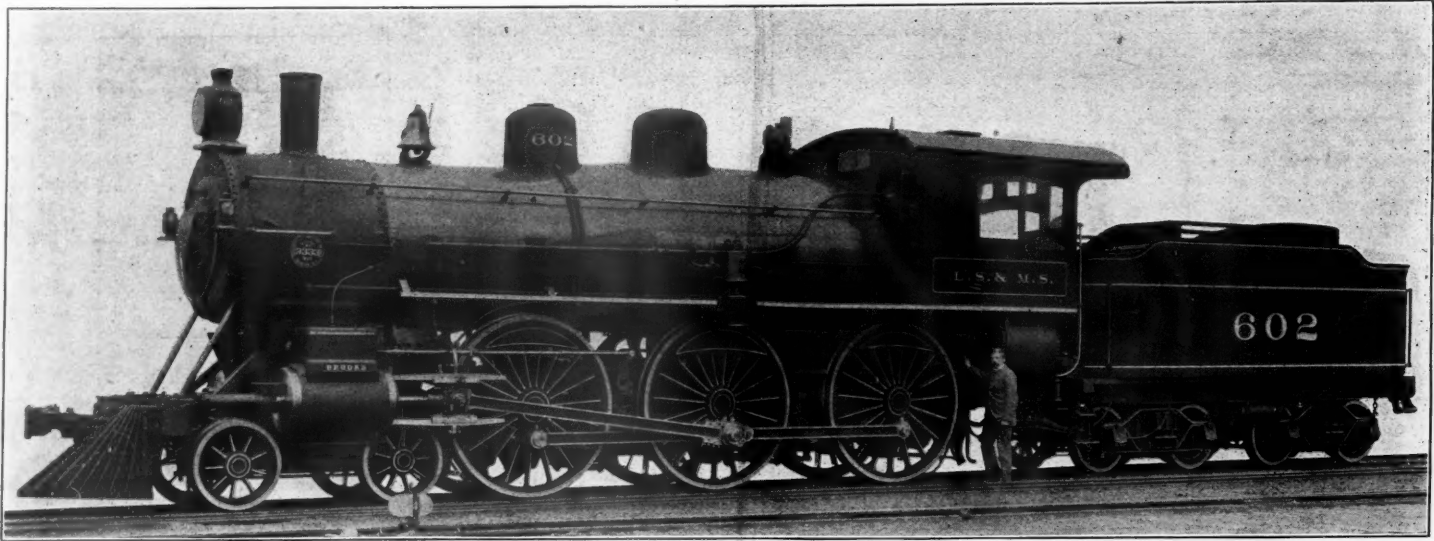
the final average is made by taking the aggregate length of all the runs and the aggregate number of minutes shown for them in the published time-tables. The 835 runs in Prussia aggregated 36,696 kilometers and the aggregate time was 31,865 minutes. The trains are again classified according to the classes of passengers which they carry; of the 835 Prussian trains 31 were "luxé" (trains limited as to class); 181 had first and second class cars; 607 had first, second and third class, and 16 had four classes.

The fastest train in the German Empire is one from Wittenburg to Hamburg, which runs 159.2 kilometers

(99 miles) in 116 minutes, or at the rate of 51.2 miles an hour. There are two trains daily at this speed, leaving Wittenburg at 2.58 p. m. and 9 p. m. The longest train run is between Berlin and Leipzig, 172.7 kilometers (107 miles). The runs which are made at the rate of 50 miles an hour or faster are

General Particulars.	
Type	10-wheel passenger
Name of builder	Brooks Locomotive Works
Name of operating road	Lake Shore & Michigan Southern Ry. Co.
How many and dates of delivery	11, October, 1899
Gage	4 ft. 8½ in.
Kind of fuel to be used	Bituminous coal

Boiler.	
Boiler, type of	Extended wagon top
" working steam pressure	210 lbs.
" material in barrel	Steel
" thickness of material in barrel	¾ in., 11 in., ¾ in.
" tube sheet	¾ in.
" diameter of barrel, front	66 in.
" " at throat	74½ in.



Heavy 10-Wheel Passenger Locomotive—Lake Shore & Michigan Southern Railway.
Mr. W. H. MARSHALL, Superintendent of Motive Power. Built by the BROOKS LOCOMOTIVE WORKS, Dunkirk, N. Y.

from Büchen to Ludwigslust, 68 km.; from Freiburg to Offenburg, 62.9 km.; and between Wittenburg and Hamburg.

Brooks Ten-Wheelers for the Michigan Southern.

Eleven 10-wheel locomotives similar to the one shown in the accompanying engravings are to be built for passenger service on the Lake Shore & Michigan Southern Railway by the Brooks Locomotive Works. These very heavy engines are expected to maintain, if required, a speed of 60 miles an hour with 14 cars. As might be surmised, considerable weight has been put in the boiler, which is an extended wagon top, radial stay type, with the firebox over the frames. The heating surface is 2,917 sq. ft. (which is the same as for the H-5 Consolidations of the Pennsylvania), and the diameter at the throat is 74 in.

A general notion of the sizes and weights may be obtained from the following: The cylinders are 20 x 28 in., the steam pressure 210 lbs., driving wheel diameter 80 in., total weight 171,800 lbs., tank capacity for water 5,000 gals. and for coal 9½ tons. These

Weight on drivers	133,000 lbs.
" trucks	38,600 lbs.
" total	171,600 lbs.
" tender, loaded	112,000 lbs.
Wheel base, total, of engine	27 ft. 4 in.
" driving	16 ft. 6 in.
" total, engine and tender	55 ft. 2½ in.
Length over all, engine	41 ft. 4½ in.
" total, engine and tender	64 ft. 4½ in.
Height, center of boiler above rails	9 ft. 2 in.
" of stack above rails	14 ft. 11 in.
Heating surface, firebox and arch flues	2,223 sq. ft.
" tubes	2,694 sq. ft.
" total	2,917 sq. ft.
Grate area	33.6 sq. ft.

Wheels and Journals.

Drivers, number	6
" diameter	80 in.
" material of centres	Cast steel
Truck wheels, diam.	36 in.
Journals, driving axle	9 in. x 12 in.
" truck	6 in. x 12 in.
Main crank pin, size	6½ in. x 6 in.
" coupling pin, size	7¼ in. x 4½ in.
" pin, diam. wheel fit	7½ in.

Cylinders.

Cylinders, diam.	20 in.
Piston, stroke	28 in.
Piston rod, diam.	3½ in.
Main rod, length, center to center	133 in.
Steam ports, length	19 in.
" width	1½ in.

Seams, kind of horizontal	Sextuple
" " circumferential	Double
Crown sheet, stayed with	Radial stays
Dome, diam.	30 in.

Firebox.

Firebox, type	Over frames
" length	121 in.
" width	41 in.
" depth, front	78 in.
" back	63½ in.
" material	Steel
" thickness of sheets	Tube, ¾ in.; sides, back and top, ¾ in.
" brick arch	On water tubes
" mud ring, width	Back, 3½ in.; front and sides, 4 in.

Grates, kind of	Cast iron rocking
Tubes, number of	345
" material	Charcoal iron
" outside diam.	2 in.
" thickness	No. 12 B. W. G.
" length over tube sheets	15 ft. ¼ in.

Smokebox.

Smokebox, diam., outside	69 in.
" length from flue sheet	69 in.

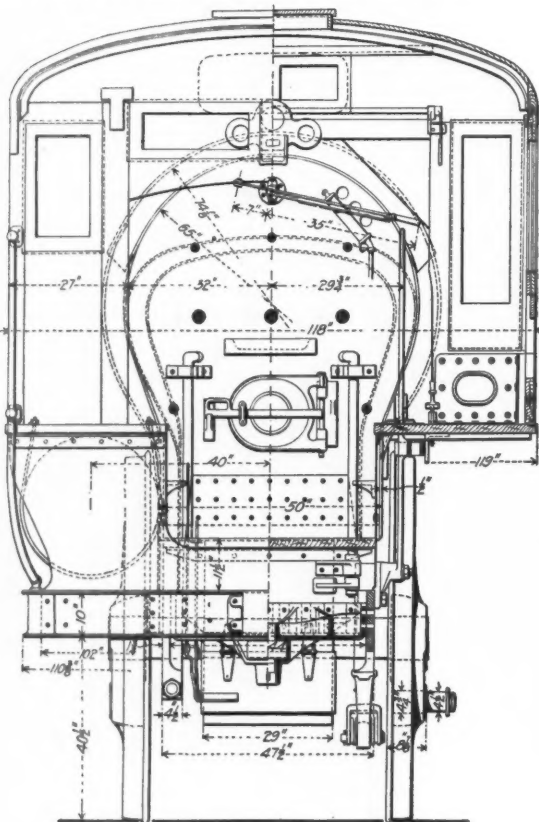
Other Parts.

Exhaust nozzle, single or double	Single
" " variable or permanent	Permanent
" diam.	5½ in.
" distance of tip below center of boiler	7 in.

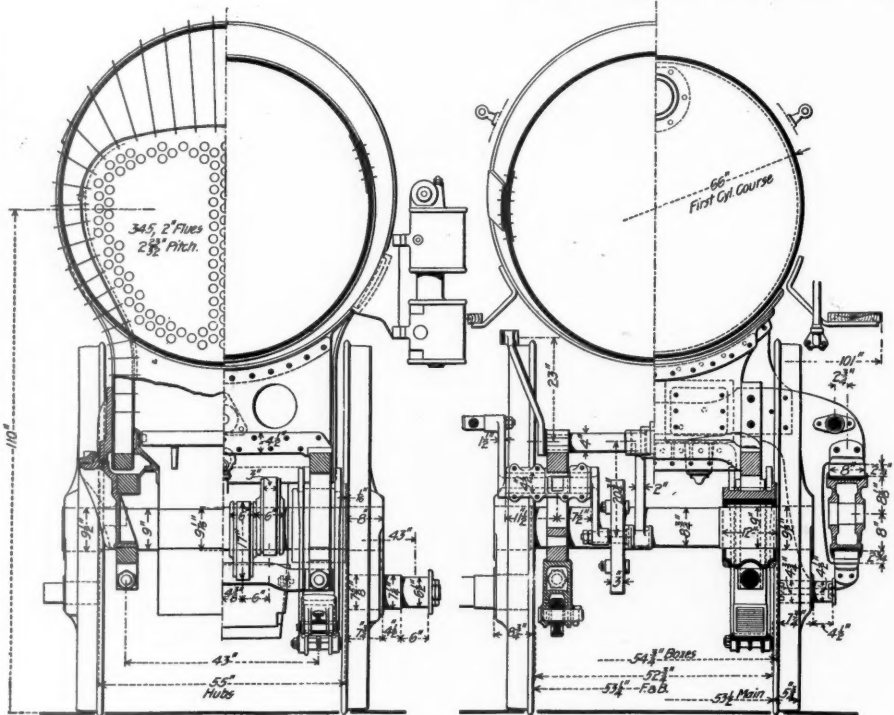
Netting, wire or plate	Wire
" size of mesh or perforation	2½ x 2½
Stack, straight or taper	Steel, taper
" least diameter	15 in.
" greatest	16½ in.
" height above smokebox	34½ in.

Tender.

Type	8-wheel, steel frame
Tank, type	"U" shape
" capacity for water	5,000 gal.



Rear Elevation and Section of 10-Wheeler.



Sections of Ten-Wheel Passenger Engine—Lake Shore & Michigan Southern.

engines have about 25,000 lbs. tractive power, which is about 25 per cent. more than for the other heavy passenger engines now on that road. The engravings of the elevation and sections, shown herewith, bring out the details and are worthy of a careful study. It is hardly necessary to note that these are among the most powerful ten-wheel engines ever built. The descriptive specifications follow:

Exhaust ports, length	19 in.
" width	2¾ in.
Bridge, width	19 in.

Valves.

Valves, kind of	Allen-Richardson balanced
" greatest travel	6.2 in.
" outside lap	1½ in.
" inside clearance	¾ in.
Lead in full gear	1 in. negative
" constant or variable	Variable

Tank capacity for coal	9½ tons
" material	Steel
" thickness of sheets	¾ in. and ¾ in.
Type of under frame	Steel channel
" springs	Triple elliptic
Diam. of wheels	36 in.
" and length of journals	5½ in. x 10 in.
Distance between centers of journals	5 ft. 6 in.
Diam. of wheel fit on axle	6½ in.
" center of axle	5½ in.
Length of tender over bumper beams	21 ft. 2 in.
" tank	19 ft. 6 in.



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EDITORIAL ANNOUNCEMENTS.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to improvements. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially either for money or in consideration of advertising patronage.

A large number of American railroad managers and superintendents now believe in the use of the block system, even where passenger trains are not numerous (as on most single-track lines) and where the concentration and interlocking of switches and signals at stations is very far from complete. This belief appears to be based on the results of an intelligent study of the experience of several years. To those who wish to confirm their opinions in this matter, or those who are still in doubt as to whether they can ever give up the long-loved and time-honored "American dispatching system" we commend a perusal of the record of "head-on" collisions printed in this issue of the Railroad Gazette, page 772. An unbroken list of 13, beginning with those of September 10, were reported as due to mistakes in connection with train orders, forgetfulness or other well known kinds of negligence already familiar to those who read the accident records. And we have no doubt of the correctness of these reports, although not every one is officially confirmed. Seven others in the list are of the same kind (three of them have been verified), making 20 costly wrecks of this class in a single month; and 15 of the 20 were fatal to one or more persons. Eight cases were simply "mistakes in giving or understanding telegraphic orders"; but cases like that at Paisley, Mont., on the 27th, really come under the same head, and sub-classification is of no particular value in the record. In six cases the exceedingly simple (?) explanation is that "they forgot about the other train." The simplicity of the space interval principle, a principle which needs the support of neither time-tables nor watches, stands as the one all-inclusive remedy for the varied kinds of forgetfulness, ignorance, dullness, inexperience and recklessness which appear in a study of the causes of these 20 collisions. We have not set out to write an essay on the block system, however, but merely to call the reader's attention to the record. Each can learn for himself the facts of cases which occurred near him (and, no doubt, can get interesting details which we did not); and he can buttress those few records with the larger number in our record. In particular, it would add much to the value of each of these 20 records if answers could be had to the questions (1) Were these negligent men new to the business, to the road, to the division or to that particular train? (2) How were the circumstances of the case affected by the unusually large number of trains now running? Of course, there is an increased liability to collision simply from the increase in the number of trains, without regard to the necessity for working extra hours or for putting on green brakemen, firemen, or other employees; but what everybody wants to know is, will the arithmetical explanation account for the whole of the increase in injuries to persons and property?

The New Ten-Wheeler for the North Eastern Railway.

The ten-wheel express engine designed by Mr. Worsdell for the North Eastern Railway of England is of unusual interest to American readers because of its fundamental likeness to American express engines. We are told that this type was chosen because of the great weight of the fast trains to be hauled, and in this case it is proposed to haul a heavy train about 125 miles without stops at 53 miles an hour. It will be seen that the ability to start and accelerate quickly is not so important as the power to keep up steam, and that being so it is an open question if an Atlantic type engine would not have been a better design for this particular service. A more capacious firebox and larger driving wheels could have been used, and, as we say, the performance of the engine in hauling these trains is primarily a question of steam capacity. Tractive effort is of only secondary importance.

There are a few other features to which attention may be called. The cylinder and driving wheel proportions of the new locomotive conform to American rather than English rules. Cylinders 20 x 26 in., 103,600 lbs. on the driving wheels, which are 73 1/4 in. in diameter, and 200 lbs. working steam pressure, give a theoretical tractive effort at starting of about 22,700 lbs., or nearly 22 per cent. of the adhesive weight. This is rather interesting, as not many months ago the London "Engineer" discredited the performance of an American locomotive because the builders claimed they were able to utilize more than one-sixth of the adhesive weight.

With no intention of criticising the new design, we would suggest that the firebox and boiler are too small for the cylinders, there being 1,769 sq. ft. of heating surface and 23 sq. ft. of grate area; the exhaust nozzle is 5 in. in diameter. Even allowing for the superior quality of English coal, it is not plain how, with so small a grate and boiler, the cylinders can be supplied unless English engineers have materially changed their views as to the proper rate of combustion. This is a matter of importance, as the successful working of the fast trains between Philadelphia and Atlantic City has indicated, if not proved conclusively, that large grate area and large boiler capacity are the first requisites for a high-speed locomotive. It so happens that in this case the wide grates require the use of a pair of trailing wheels, but that particular wheel arrangement in itself is unimportant. A locomotive was recently built by the Lancashire & Yorkshire which resembled the Atlantic type in the matter of wheel arrangement, but a narrow firebox was used, and we cannot recall that a fast passenger locomotive has yet been built in England which embodies all the essential features indicated by recent experience with fast trains in this country; namely, a wide firebox, ample boiler capacity and large driving wheels. Even with the smaller clearances on English roads a still better design than any so far brought out could possibly be made along the lines of the new Atlantic type locomotives of the Philadelphia & Reading and Pennsylvania railroads. At least, if American practice is to be followed in building fast locomotives to run continuously for long distances, these should be taken as examples of the best designs in preference to ten-wheel engines with narrow fireboxes.

The Am. Soc. C. E. Rail Sections.

In our issue of Oct. 6, page 694, appeared an editorial article under the above title. As explained then, the article was preliminary and printed with a view not only to give some information, but to secure more. The chief facts set forth there are summarized for the reader's convenience.

One of the great mills reported that in 1899 about 75 per cent. of its total tonnage will be rolled to the Society sections. Another mill reported that 48 per cent. of its product is now rolled to the Society sections. Still another reported that of rails above 50 lbs. per yard 80 per cent. of its product is rolled to these sections. Comparative statistics showed a striking increase in the use of sections of 80 and 85 lbs. weight.

We said, however, that there are signs of reaction from the heavy rails and that it would not be surprising to see the proportion of weight of 80 lbs. and upwards decline somewhat for various reasons set forth. The chief of these reasons is perhaps the unsatisfactory performance of recent heavy sections, and it was alleged that the rolling mills have not done what they should have done to raise the quality of the metal or to improve the physical treatment.

We now have letters from a number of gentle-

men who are well informed on this subject, and below are some extracts from these letters which we present without further comment:

A chief engineer and a member of the Society's committee which fixed the rail sections writes: "Your comments are entirely in accord with my own views. I hear no complaints of the Society's sections from the roads that are using them. The rapid progress in their adoption, as shown by your statistics, is the best evidence that they are giving satisfaction. No standard can correct the evil of inferior material. This is purely a commercial question. Higher prices should conduce to better quality, but in my experience the reverse is the case. Active competition is the only inducement for manufacturers to improve quality. Under abundance of orders and large profits manufacturers grow independent."

Another chief engineer writes: "I know of no reason to question any of your facts and conclusions except that a little emphasis might have been placed on the value to the railroads of the Society sections aside from questions of weight or quality. This company has bought 75-lb. rails of American Society section exclusively since 1892 (beginning a year before the standards were adopted by the Society) and the wear has been compared with a deep head, 67-lb. section and an older 56-lb. section. The new rails are giving much better service than the 67-lb. section. The old 56-lb. rails, although too light to be stiff, show high durability, the result of the method of manufacture. Our present rail sections are satisfactory and the railroads could well afford to pay for more thorough work and slower work on the metal. The question of weight should be considered independently."

A railroad president who has been actively interested and influential in bringing about the Society standards says: "There is no doubt that the heavy sections have been disappointing and that the tendency is to stop at about 55 lbs. There is not much danger of the railroads going back to the old sections because the rails of from 70 lbs. to 85 lbs. have been used pretty generally to replace rails of a less weight. The Society section has come to stay."

The sales agent of one of the great mills says: "There is no question as to the interest of the rail makers that an acceptable standard be adopted. There should be none as to the rail user. Your investigation will excite much interest. The service rendered by the American Society of Civil Engineers in this connection is of inestimable value."

A chief engineer writes: "Our company has used the Society 80-lb. section since 1895, and on the whole we are well pleased. It would be more satisfactory if we could get a harder and tougher rail. I do not believe there is any economy in a rail of heavier section than 80 lbs., unless a very much harder rail might safely be used with such heavier section. It is not practicable to get the harder and tougher rails from the mills in this section. We have to take a rail which is satisfactory to the maker, so far as chemical composition is concerned, and content ourselves with careful inspection and with a guarantee covering defective rails found after the first five years of service."

A chief engineer says "Your facts and opinions accord with my own views and experience. We have used since 1889 an 80-lb. section practically identical with the American Society standard, which latter we have now adopted. In 1894 we decided to increase the weight of our rails on main line to 90 lbs., using the Society standard. The results, so far as section is concerned, are satisfactory. The wear of the head extends over its entire surface. The percentage of breakage is so small that it may be ignored. The shape of the head gives the best design for angle bar splices. There is no doubt that the heavy rails do not give the same wear per ton as the light ones. This is altogether the fault of the metal, and that fault is more physical than chemical. The metal in the heavy sections is not worked enough. I do not believe that the important railroads will go back to a lighter rail. They cannot use a rail less than 80 lbs. with the heavy rolling stock and locomotives now in common use. Some of the railroads overdid it when they adopted a 100-lb. section and they are going back to 90 or 85 lbs., which is a very sensible move. The American Society section will, within a few years, be practically universal in this country and will probably be exported."

Another chief engineer writes: "I am in full accord with your views. This road has been using the Society section since 1892, having taken it from the preliminary report of the committee, and the section is entirely satisfactory. For four years we have used Mr. P. H. Dudley's specifications to govern the manufacture. The results have been satisfactory in the main, but some are inclined to think that the increase in the rate of hardness from the lighter to the heavier sections is in somewhat too great a ratio to suit present methods of rolling. More manipulation in the rolls rather than a decrease in the hardening element would probably give the desired results. Your investigation is timely and will be appreciated by rail users and makers."

A chief engineer says: "We have nearly 900 miles of 75-lb. rail and over 180 miles of 65-lb. rail of the

Society section now in track. I cannot yet express an opinion as to their service based on experience, but I cordially endorse your views as to the necessity of increasing the hardness of the rail with heavy weights and of insisting upon more work on the heavy sections during manufacture. For these very reasons we have not yet used any rails of a greater weight than 75 lbs. to the yard and I believe that when supported by a sufficient number of ties this weight of rail will give fully as good satisfaction as heavier sections, if not better; at least until such time as we can safely use more carbon."

September Accidents.

Our record of train accidents in September, given in this number, includes 116 collisions, 110 derailments and 5 other accidents, a total of 231 accidents, in which 93 persons were killed and 226 injured. The detailed list, printed on another page, contains accounts only of the more important of these accidents. All which caused no deaths or injuries to persons are omitted, except where the circumstances of the accident as reported make it of special interest.

These accidents are classified as follows:

COLLISIONS.

	Rear.	Butting.	Crossing and other.	Total.
Trains breaking in two.....	19	0	0	19
Misplaced switch.....	3	2	1	6
Failure to give or observe signal, ..	1	0	3	4
Mistake in giving or understanding orders.....	0	18	1	19
Miscellaneous.....	10	5	8	23
Unexplained.....	17	9	19	45
Total.....	50	34	32	116

DERAILMENTS.

	Broken parallel rod.....	1
Loose or spread rail.....	3	1
Defective bridge.....	2	2
Broken wheel.....	5	1
Broken axle.....	7	2
Failed brakebeam.....	1	2
Brake hose burst.....	1	3
Failure of coupling or drawbar.....	3	2
Failure of drawbar and automatic application of air brakes.....	1	3
Broken car.....	2	110

OTHER ACCIDENTS.

Boiler explosion.....	1
Broken siderod.....	1
Cars burned while running.....	3

Total number of accidents..... 193

A general classification shows:

	Collisions.	Derailments.	Other accidents.	Total.	P. c.
Defects of road.....	0	5	0	5	2
Defects of equipment.....	19	21	2	42	19
Negligence in operating.....	52	7	3	62	28
Unforeseen obstructions.....	0	12	0	12	4
Unexplained.....	45	65	0	110	47
Total.....	116	110	5	231	100

The number of trains involved is as follows:

	Collisions.	Derailments.	Other accidents.	Total.
Passenger.....	33	21	4	58
Freight and other.....	168	89	1	258
Total.....	201	110	5	316

The casualties may be divided as follows:

	Collisions.	Derailments.	Other accidents.	Total.
Killed.				
Employees.....	50	15	0	65
Passengers.....	10	3	0	13
Others.....	12	3	0	15
Total.....	72	21	0	93
Injured.				
Employees.....	97	38	0	135
Passengers.....	46	34	0	80
Others.....	4	4	3	11
Total.....	147	76	3	226

The casualties to passengers and employees, when divided according to classes of causes, appear as follows:

	Pass. Killed.	Pass. Injured.	Emp. Killed.	Emp. Injured.
Defects of road.....	0	0	3	0
Defects of equipment.....	0	1	3	10
Negligence in operating.....	10	46	51	100
Unforeseen obstructions and maliciousness.....	0	0	0	4
Unexplained.....	3	33	8	21
Total.....	13	80	65	135

Forty-seven accidents caused the death of one or more persons each, and 36 caused injury but not death, leaving 148 (68 per cent. of the whole) which caused no personal injury deemed worthy of record.

The comparison with September of the previous five years shows:

	1899.	1898.	1897.	1896.	1895.	1894.
Collisions.....	116	90	77	45	50	47
Derailments.....	110	82	70	64	54	91
Other accidents.....	5	4	0	7	4	8
Total accidents.....	231	185	147	116	108	146
Employees killed.....	65	33	39	30	25	30
Others killed.....	28	17	33	24	13	20
Employees injured.....	135	78	68	70	53	84
Others injured.....	91	50	97	109	126	42
Passenger trains involved.....	58	45	53	33	42	61

Average per day:

Accidents.....	7.70	6.17	4.90	3.87	3.60	4.87
Killed.....	3.10	1.67	2.40	2.13	1.27	1.67
Injured.....	7.51	4.27	5.50	5.97	5.97	4.20

Average per accident:

Killed.....	0.40	0.27	0.49	0.47	0.35	0.34
Injured.....	0.98	0.69	1.12	1.54	1.65	0.86

We have lately been recording a remarkable expansion in all the principal features of railroad activities—earnings, trains run, men employed, money spent, and so on; and now we must do the same

in the accident record. The number of accidents, while large, is not phenomenal (indeed, the total is not the best index); neither is the number of fatalities in the passenger list so very high; but the number of derailments and collisions in September which resulted in the death of one or more persons each was the largest number recorded in any month since October, 1890. Indeed, the present number, 47, is quite unusual, even for times of active traffic. In September, 1890, the number was 56 (including 12 cases in which passengers were killed); in October it was 62; in October, '93, it was 43; but outside of these three months the number is usually less than 35, as far back as the record goes.

A remarkable feature of the present record is the long list of butting collisions. These are the subject of a brief note in a preceding column (first editorial page); but the best way for the reader to get an idea of these collisions is to read the list itself. The collision at Denton, Ky., was reported in our issue of September 29, p. 678. The most fatal passenger train accident was the butting collision at Reno, Cal.

The most notable rear collisions were those at Miller's, Pa., on the 6th, and at Brooklyn, N. Y., on the 3d. The former (which also was reported Sept. 29) is classed as due to a misplaced switch, although such classification is obviously arbitrary. A very curious accident to a passenger train occurred at Elkhart, Ill., on the 23d.

Serious freight train accidents occurred at Williamson, W. Va., Columbia, S. C., Paul, Neb., and Windom, Minn. The Williamson case was a break-in-two, a class of accidents which nowadays, in a period of heavy freight trains partially air braked, is very costly. Nineteen of these accidents appear in the present record, and this record is, no doubt, only a suggestion of the total loss from this cause in a month of such very heavy freight traffic as is now being done on all the large railroads. One serious freight train accident was due to the fact that an engineman went to sleep; and in another case the conductor, fireman and one brakeman on a train which met disaster appear to have all been asleep.

On a logging railroad near Williamsport, Pa., a freight train ran away down a steep grade and was wrecked. At Newville, Pa., on the 12th, nine track laborers were injured, one fatally, by the overturning of a car from which they were unloading rails. An unbalanced load appears to have been lect on one side of the car. These two accidents do not, of course, appear in the foregoing record. On the Mexican Central, Sept. 28, near Cardenas, a long freight train fell over a precipice and five men were killed. Near the City of Mexico a train of the Mexican Railroad ran into a street car and killed seven persons. Two of the American employees on this train were spirited to El Paso, Tex., having been concealed in a sleeping car by friends.

Accidents on electric railroads were also numerous in September. We have accounts of 29 cases in the United States in which nine persons were killed and 71 injured. In this total no account is taken of such cases as a car running into a wagon, of which reports are published every now and then, often accompanied by accounts of fatal injuries. Of the 29 accidents two, one in Massachusetts and one in the State of Washington, occurred to freight cars. The increasing disposition among street railroad companies at the present time to enter the field of freight transportation suggests that by and by we shall have a greater variety of accidents to report than we now have. One of the fatal accidents of the month was the stoppage of a car on a crossing because the trolley came off the wire, leaving the car without power. A freight train ran into it. In another case where a locomotive ran into a street car (Brooklyn, N. Y.) four persons were killed and 10 injured.

On another page is an interesting paper by Mr. Ryder, of the Burlington, on the use of the telegraph in what may be called commercial-railroad business. Concerning the practice of the Baltimore & Ohio, referred to by Mr. Ryder, we have inquired of Mr. Selden, Superintendent of Telegraph of the B. & O., and he informs us that the practice of keeping a cost record of telegrams sent over the railroad wires has proved very satisfactory. There has been a large saving in the number of telegrams sent, and officers and employees have been educated in the art of brevity; and the trouble and expense incurred have been slight. The messages are not actually charged; no money account is kept; but the messages sent by each department are "checked" against that department, and a statement is sent to the head of the department at the end of each month. Messages containing 10 words or less are rated at 10 cents, all others 20 cents each. Besides this the telegraph department "censors" telegrams. A message unnecessarily long is returned to the officer responsible for it, with the unnecessary words underlined in blue pencil.

Readers of the Railroad Gazette will remember the interesting account published in these columns last year (page 739), of the organization and systematic management of the police department on the

railroads of the Pennsylvania Lines West of Pittsburgh. According to local newspapers a similarly comprehensive and successful plan of management has been adopted on the Middle Division of the Pennsylvania Railroad. The main line of this division is from Harrisburg to Altoona, 132 miles. Various local observers report that formerly the passage of a freight train, with from five to 25 tramps aboard, was a familiar sight; and one careful man says that the average number of tramps passing his station on freight trains daily was more than 150, possibly 175. Now it is the universal testimony that line-tramps of the "hoboes" have been driven off.

NEW PUBLICATIONS.

Jim Skeevers' Object Lessons on Railroadroading for Railroaders. By John A. Hill. New York: American Machinist Press, 1899. \$1.

Jim Skeevers is an engine driver of preternatural sagacity and is everlastingly teaching folks things by means of what he calls object lessons. Strange to say, he does not get fired off the road, but becomes Superintendent of Motive Power and Rolling Stock. Within the limits of engine running and management, shop practice and handling men, he teaches pretty much everything for everybody, and his lessons are sound and presented in a human way. The author of Jim Skeevers long ago discovered (in fact he knew it by instinct) that pedantry and dogmatizing have emptied many churches and decimated many subscription lists, and he has tried to insinuate knowledge and doctrine into people before they knew what he was at. Skeevers is the creation of the lively brain of Mr. John A. Hill, who was for years one of the owners and editors of Locomotive Engineering and who is now President of the American Machinist Company. The object lessons now collected in a volume were published eight or ten years ago in the columns of his journal, and he says that he has now gathered and reprinted them partly because some people seem to like them and partly for his own satisfaction, and we can't blame him for it. We have but one criticism to make of the book, which is that it is several times as long as it is broad and the printed page looks a good deal like a column of the American Machinist. We have no objection to a column of the American Machinist in its proper place, but it has certain inconveniences in a book; no man knows quite where to put it on his shelves. But after all the primary purpose of a book is not to stand on shelves, but to be read, and the column width is comfortable reading.

Tables of Squares; containing the true Square of every Foot and Fraction thereof from 0 to 100 Feet, advancing by one-sixteenth of an Inch. By John L. Hall. New York: Engineering News Publishing Co., 1899. \$2.

This little volume of 100 pages, 3 1/4 in. x 5 1/2 in., contains tables of the squares of each foot, inch and sixteenth of an inch from 0 to 100 feet. The squares are expressed in decimals of a foot, carried out to six places. The tables are printed in fine, clear type and the quantities are arranged in groups of four, and one column for each inch, which adds to the convenience of using the tables. Another handy feature of the arrangement is that the page numbers in the book agree with the number of feet to be squared. For instance, pages 16 and 16 1/2, which face each other, contain the squares of the 16th foot and of all inches and sixteenths of inches up to and including 16 ft. 1 1/2 in. The author says in his introduction that after the tables were electrotyped each square was again checked in independent computation and any errors discovered were corrected in the plates. It is believed, therefore, that every quantity is correct to the sixth place of decimals.

Ajax Loquitur. By Robert Weatherburn, M.I.M.E. London: Crosby Lockwood & Son. 5 in. x 7 1/4 in. 2s. 6d.

This book, which comes to us with the compliments of the Richmond Locomotive & Machine Works, Richmond, Va., purports to be the autobiography of an old English locomotive, "Ajax, No. 9," and the author, to whom the facts were confided by the machine while it was in a talkative mood one day, just before it was scrapped, sets forth the story in entertaining style. The bulk of the work of 150 easy pages consists of a running historical sketch of the principal improvements made in locomotives in England between 1835 and 1875, with historical incidents of mechanical interest. There are a number of drawings of engine details and full-page portraits of George and Robert Stephenson. The author states his facts in clear and accurate terms, and there is no excessive padding for the sake of making a romance.

Report of the Proceedings of the Twenty-third Annual Convention of the Master Car Builders' Association, 1899. Joseph W. Taylor, Secretary, 667 Rookery, Chicago, Ill.

The report of the last year's work of the M. C. B. Association makes a volume of 512 pages with the usual folding plates. Of course it is unnecessary to say what the report contains, as the reader who cares about the doings of this important organization is already well informed as to the committee reports, discussions and action of the Association.

TECHNICAL.

Manufacturing and Business.

George C. Davis, of Philadelphia, a graduate of the Worcester Polytechnic Institute, a member of the American Society Mechanical Engineers, and who was connected with Thos. Devlin & Co., of Philadelphia, has accepted a position with the Sterlingworth Railway Supply Company, of Easton, Pa., as Metallurgist. H. O. Evans has been appointed Superintendent of the Malleable Iron Department of the same company, succeeding H. C. Duggan, resigned. Mr. Evans is a member of the American Society of Mechanical Engineers and was recently connected with H. R. Worthington, Incorporated, in an official capacity, being formerly connected with Stanley G. Flagg & Co. and the Crane Co.

Safety hollow staybolt iron made by Falls Hollow Staybolt Co., Cuyahoga Falls, O., is specified to be used in the locomotives recently ordered by the Atchison, Topeka & Santa Fe.

Iron and Steel.

There has been a pause in ordering iron and steel since the heavy buying a few weeks ago. Heavy steel rails are as high as \$37 per ton for round lots for early delivery, and orders for delivery further ahead were generally quoted last week at \$35. There is still a big demand for old iron. The prices are: Old iron, f. o. b. New York, \$25; old steel scrap, f. o. b. New York, \$22, an advance of 50c.

Dun's Review of a week ago says: Prices of pig iron for early deliveries are still advancing, but as a great part of the demand has protected itself by contracts running far into next year, including purchases of 50,000 tons Bessemer at \$23.50, and as billets are quoted at \$39.50 for spot but \$35 for next year, the market can be interpreted several ways. Anthracite pig is also quoted at \$24.50 for early delivery, and local coke at Chicago.

The Montreal Rolling Mills Co., reports state, contemplates building extensive works at Sidney, Cape Breton. The Dominion Iron & Steel Co. has now under way a large plant at this place.

Mr. Chas. N. Kuntz, for several years associated with the Wrought Iron Bridge Co. of Canton, O., as Purchasing Agent, has, with others, organized the Standard Bridge & Structural Co. and will soon make application in New Jersey for incorporation.

The property and franchises, etc., of the Londonderry Iron Co., Ltd., were sold at auction Nov. 1 for \$137,000 to H. S. Holt. The estate comprises about \$30,000 of iron lands and town lots in Londonderry, N. S.; also a blast furnace, rolling mill, foundries, coke ovens, a railroad and some rolling stock, mines, houses and other buildings.

The Dominion Construction Co. of New York has been incorporated in Delaware to build bridge tunnels, shafts, etc.; capital, \$100,000.

The Washburn & Moen Wire Works at Waukegan, Ill., owned by the American Steel & Wire Co., was partially destroyed by fire Nov. 4. The loss is placed at \$500,000.

Ogden & Wallace, New York, iron and steel dealers, have dissolved partnership, owing to the illness of Theodore C. Wallace, who is at his home in Montclair, N. J. Mr. Ogden will continue in the business. Members of the new co-partnership will be Charles W. Ogden, John B. Carss and John H. Palmer.

Press dispatches from Duluth, Minn., say that the purchase of the Ironton structural steel mill, the West Duluth Car Works and the West Superior steel mills, by John E. Searles of New York, has been concluded. It is said that the price paid for the three concerns and the expenditure necessary to put them in running order together amounts to \$2,000,000. The plants have been idle for several years, but all will be put in operation as soon as changes can be made, and 2,500 men will be employed. All kinds of structural steel and also railroad cars will be made. The West Superior mills will have \$125,000 spent on them for improvements, and \$200,000 will be spent on the Ironton plant, which will have three new open-hearth furnaces. The improvements at the West Duluth Car Works will cost \$25,000. (Oct. 6, p. 697.)

The Atlantic Iron & Steel Co. proposes to have a capital stock of \$10,000,000 instead of \$20,000,000, as at first suggested. Of the \$10,000,000, half is to be 7 per cent. preferred stock. This company will be composed of the New Haven Iron & Steel Co. and the Susquehanna Iron & Steel Co.

The American Steel & Wire Co. is reported to have closed a contract last week for 50,000 tons of basic iron, and another for 50,000 tons of Bessemer iron which will cost \$2,375,000.

The Lackawanna Iron & Steel Co. will vote at the stockholders' meeting in Scranton, Dec. 29, on the proposition to increase the capital stock to \$25,000,000.

Reports state that the Midvale Steel Co. proposes to build an extension to its plant.

The Illinois Steel Co. has petitioned the city for permission to fill in 10 acres of land adjoining the works in South Chicago.

The Pittsburgh Steel Foundry Co. began operations Nov. 1.

Work will probably be started at the new steel plant at Ensley, Ala., in a few weeks.

The plant of the American Steel & Wire Co. at Waukegan, Ill., was damaged by fire Nov. 4. At the time of going to press the exact amount of the loss was not known, but the daily papers give it as about \$400,000, fully insured. The machine shops and rolling mill were not damaged. The fire will not affect the obligations of the company to furnish railroad wire fencing, wire rope, springs, shafting and other railroad supplies, as this class of material was not made at the Waukegan shops.

The United States Wire & Nail Co. has been incorporated, with a capital of \$100,000. J. N. De Noon and J. C. De Noon of Pittsburgh, and E. W. Palmer and Frank Hayes of Cleveland are interested.

The Diamond State Steel Co. of Wilmington, Del., recently organized, has bought the plant of the Diamond State Iron Co., and is to build a plant to make structural steel.

Henry Phillips and Wm. Hunt have leased the Union Iron Works of Ottumwa, Ia., to make a box car loading device.

The St. Louis & San Francisco is said to have placed orders for 8,000 or 9,000 tons of rails before the recent advance, for next year. The Missouri Pacific has also ordered a considerable quantity.

Government Work.

The Board of Public Works at San Juan, Porto Rico, are asking for proposals for the construction of about 18 miles of road. It is estimated that the cost of the work will reach all of \$200,000. Capt. W. V. Judson, Corps of Engineers, U. S. A., President of the Board of Public Works, will furnish information. Bids are to be opened on Dec. 23.

Sealed proposals, in triplicate, for delivering about 92,000 tons, more or less, of stone in place in jetties at mouth of St. Johns River, Fla., will be received at the U. S. Engineer Office, St. Augustine, Fla., until 12 noon, Nov. 21. Capt. C. H. McKinstry, Corps of Engrs., U. S. A.

Proposals for rock removal in Raritan River, N. J., and for rock removal and dredging in Passaic River, N. J., are wanted at the U. S. Engineer Office, New York, until 12 M., Dec. 1. Col. J. M. Barlow, Corps of Engrs., U. S. A.

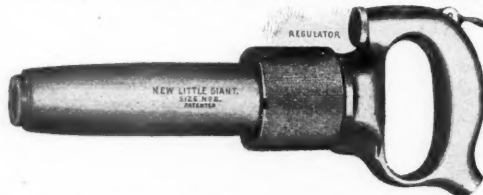
Bids are wanted for dredging in Harlem River, N. Y., until 12 M., Nov. 27. Information furnished on application. Lieut.-Col. W. H. Benyaurd, Corps of Engrs., U. S. A., Army Bldg., New York.

Sealed proposals for dredging in Apalachicola Bay, Fla., are wanted until 12 M., Nov. 14. Capt. C. A. F. Flagler, Corps of Engrs., U. S. A., Montgomery, Ala. Also for dredging on Carrabelle Bar, Fla.

Sealed proposals in duplicate will be received at the U. S. Engineer Office, Witherspoon Bldg., Philadelphia, until 12 noon, Nov. 20, for dredging in Delaware River near Reedy Island, and constructing bulkhead for retaining dredged material. Lieut.-Col. C. W. Raymond, Corps of Engrs.

The "Little Giant" Pneumatic Hammer.

The Standard Pneumatic Tool Company, Chicago, has recently made some improvements in its pneumatic hammers tending to simplify and strengthen the construction. One of the latest types is shown by the accompanying engraving. A steel bushing is now used in place of the valve block, so that there are two less joints to maintain, and the throttle lever has been slightly altered. The connection between the body of the hammer and the barrel has also been changed so that the hammer is more easily taken apart. The connection is made by a large



sleeve, the body of the hammer being threaded, and a piece of flat spring within the sleeve engages notches on the barrel and locks the nut. An opening is provided so that this spring can be released when it is desired to remove the sleeve. This hammer also has a regulator, so that the air admitted can be varied to suit the work. These new tools will be sent on trial and they are guaranteed against repairs for one year. For an earlier and fuller description, see our issue of May 5, p. 314.

Lidgerwood Device for Coaling Vessels to be Tested at Sea.

The Navy Department has directed that the collier "Marcellus" and U. S. S. "Massachusetts" be fitted with conveyers for coaling vessels at sea designed by the Lidgerwood Mfg. Co., and trials of the device will be made outside Sandy Hook within a week or so, to last several days.

If the "conveyer" proves able to do what the makers expect it will, the Lidgerwood Mfg. Co. will have solved a problem of importance to the navies of the world.

A Record of Car Brasses.

We have procured from the Ajax Metal Company

information of an inspection of 1,212 old Ajax "Superb" brasses returned to the Ajax Metal Company by one of the car owners in the United States. Of the 1,212 brasses but nine had heated, and these, according to the contract, were replaced. During the past five years the average of heated brasses used on the cars of the same company has been less than one per cent.

The Simplon Tunnel.

At the end of September the Simplon Tunnel had been excavated 9,712 ft., the progress during that month having been 1,069 ft. The daily average penetration was 16 ft. 8 in. at the south (Italian) end, and 19 ft. at the north end. The number of employees engaged was 2,543, so that we may say that an average day's work of one man was represented by an advance of one-sixth of an inch in the tunnel. Progress has been made in the construction of a hotel for the engineers and higher employees, dwelling house for married laborers and a great hospital. Barracks for unmarried laborers, with all conveniences and kept very clean, afford lodging and board at the rate of 21 cents per day. Besides there are great cook houses, which supply food at cost.

The Bridge Building Combination.

Recent reports indicate that the proposed consolidation of bridge and structural steel makers will probably not include all the plants anticipated. Options on several mills which expired Nov. 1 have not been extended.

The Cast Iron Pipe Combination.

The Directors of the United States Cast Iron Pipe & Foundry Co. have declared a quarterly dividend of 1% per cent. on the preferred stock, it being the first declared. This company was formed by consolidation about the middle of last March, though it is understood that some of the properties were not taken over until about June 1. The year's dividends on the preferred stock call for about \$875,000, there being about \$12,500,000 of this issue outstanding of an authorized issue of \$15,000,000. The amounts of common authorized and issued are similar.

Republic Iron & Steel Co. Improvement.

The Republic Iron & Steel Co. is preparing plans for an electric power plant to be built at Youngstown, O., to furnish light and to operate as much of the machinery as possible in the plants controlled by them in that city. Among these are the iron mills of the Union Iron & Steel Co., the Brown-Bonell Iron Works, the Hazleton Iron Works, Mahoning Valley Iron Works, and the iron works of the Ohio Steel Co. and the Youngstown Steel Co. The power plant will be situated on property at the Brown-Bonell works and the cost is estimated to be about a million dollars. A report says that the plant will be built and the machinery selected and placed under the direction of J. S. O'Donovan, of Braddock, Pa., who has been Assistant Chief Electrician at the Edgar Thomson Steel Works of the Carnegie Steel Co., Ltd., at Braddock.

Bidders for Navy Yard Work.

Bids were opened at the Navy Department Nov. 4, for erecting the buildings at the Brooklyn Navy Yard under the Steam Engineering Department, to take the place of those destroyed by fire on Feb. 15, 1899. The bidders and bids follow: Josephus Plenty, Jersey City, lowest bid, \$385,000; Penn Bridge Co., Beaver Falls, Pa., lowest bid, \$364,000; O'Brien Hoolihan, Syracuse, \$360,000; Augustus Smith, New York, \$364,000; R. P. & J. H. Staato, Hoboken, \$400,000; Post & McCord, New York, \$397,000.

The Havana Electric Ry.

A contract has been let to W. R. Brixley for the feeder cable for the Havana Electric Ry. Co., which proposes to change the horse and steam lines in Havana into trolley roads. The total mileage will be about 54. The order for cables is for 40 miles of rubber-covered feeder cable, the weight of which will vary from 2 3/4 lbs. to 5 lbs. per foot. The total weight will be in the neighborhood of 5,000 tons. The contract calls for shipment between Jan. 1 and Feb. 1, 1900. The value of the contract is \$184,000.

The General Electric Co. has a contract for three 850 kw. direct connected generators and 110 car equipments, including motors, wires, controllers, etc. The contract is worth \$178,000.

G. F. Greenwood, formerly Chief Engineer of the Consolidated Traction Co., Pittsburgh, is Chief Engineer and General Manager of the Havana Co.

Drowning of Nicaragua Canal Surveyors.

The Isthmian Canal Commission has received cable advices confirming the reported drowning of two members of one of the parties in Nicaragua. The engineers drowned were Frank B. Clarke of Fulton, N. Y., chief of the party, and Oliver Collins Mimmack, rodman, of Washington, D. C. The despatch was from Mr. J. Imbrie Miller, chief of the Nicaraguan surveys, and gave no details beyond stating that the men were drowned at Machuca Rapids last Sunday, and that the bodies have not been recovered. Two native laborers also were drowned.

THE SCRAP HEAP.

Notes.

The Lake Shore & Michigan Southern, like the New York Central, is now managing directly the dining cars on its trains. They have hitherto been managed by the Wagner Sleeping Car Company.

The State Assessors of New Jersey have finished their valuation of railroad property for the year 1899. The total is \$224,284,792, which is an increase of \$1,867,044 over last year. The total amount of taxes assessed against the railroads is \$1,554,444, of which \$423,020 goes to municipalities.

A Los Angeles paper states that the Southern Pacific and the Atchison roads have both increased by 100 per cent. the demurrage charge on freight cars. This is due to the great volume of business now moving and the consequent scarcity of cars. From other accounts it appears, however, that the rate is one dollar a day, which, we suppose, has been the rate heretofore; but the free time is only 24 hours from 7 a. m. of the next day after delivery of notice to the consignee.

Mr. H. S. Montgomery, general watch inspector of the Atchison, Topeka & Santa Fe, has designed a dial in which the minutes are all numbered, in Arabic numerals. A circle outside the circle of minute dots shows every number from 1 to 60, and all the numbers are right side up when the watch is hung up. This dial has been adopted as standard by the Atchison road and the same design will be used on the company's standard clocks.

The Pennsylvania Railroad Company has filed in the United States District Court at New York a suit to recover \$100,000 from the owners of the City of Augusta, the steamship which ran into the Pennsylvania ferryboat Chicago on Oct. 31. It is alleged that the Augusta was running too near the New York shore, and too fast; and also that proper precautions were not taken to avoid a collision. An officer of the railroad company states that the roof of the upper deck of the ferryboat did not sink below the surface of the water and that it was not necessary for any of the passengers to leave the boat when she went down.

The Louisville & Nashville has for three years used a ticket with a divisible date line, which the scalpers cannot alter. Mr. Atmore, General Passenger Agent of the road, who, we understand, designed the ticket, says that but one attempt at alteration of the time limit of these tickets was ever made and that was immediately detected. The device is the same as that employed in money orders to limit their value. By the use of a tin ruler, costing eight cents, to detach the stub from the ticket, the division between the two pieces is made just outside a printed line showing the desired date. All other dates left on the ticket are earlier, and all later dates are left on the stub. This ticket was used by the Nashville, Chattanooga & St. Louis at the time of the Nashville Exposition and was regarded as much more satisfactory than tickets in which the time limit has to be indicated by a punch.

In the United States Circuit Court at Raleigh, N. C., Nov. 4, Judge Simonton decided in favor of the railroads in the suit for an injunction forbidding the collection of the railroad taxes as assessed by the State Corporation Commission for the present year. Nine of the principal railroads of the state joined in the suit. Press dispatches say that the decision orders the assessors to use the valuation of 1897. This year's valuation was made about 10 millions larger than that of 1897.

"No Seat, no Fare," a favorite headline of some reporters, is again going the rounds of the newspapers. It is attached to a press dispatch setting forth that in a case recently brought in a New Jersey court, two passengers who were put off from a passenger train because they refused to give up their tickets on the ground that they were obliged to remain standing, had been paid \$175 each, by the railroad company, to withdraw their suits. It appears, however, that the railroad company settled with the plaintiffs, not because they had been deprived of any right on the cars, but on account of the irregular action of the conductor in handing them over to the police after they had been put off the train.

Officers of the Louisville & Nashville state that the contract between that road and the Adams Express Company will be renewed at the end of this year and that therefore the plans for the establishment of an independent express company will not be carried out.

On the night of Oct. 31 the express car in a passenger train on the Missouri, Kansas & Texas was robbed while in the yard at Denison, Tex. The messenger was shot, apparently by a single robber, after the train had come to rest at a point short of the station where it did not usually stop.

Press dispatches of Nov. 1 report that the Wheeling & Lake Erie has advanced the pay of several classes of employees.

An officer of the Chicago General Railway, which recently introduced two-cent fares on certain street-car lines in the stock yards district, Chicago, reports that the number of passengers carried has increased 234 per cent. and the gross receipts 16 per cent.

The newspapers report that a number of prominent railroads are going to ask the Interstate Com-

merce Commission to extend the time for equipping cars with air brakes and automatic couplers. The argument will be presented that the impossibility of securing material for making the desired improvements, and the difficulty of getting cars into the shops on account of the great volume of freight now moving will make it impracticable to equip all cars by Jan. 1 next, and a request for an extension to Jan. 1, 1901, will be made.

According to the San Francisco Examiner, the sleeping car "Pioneer," Pullman's first palace car, and which was the car in which the body of President Lincoln was carried from Washington to Illinois, was used last month to carry soldiers from Cincinnati to San Francisco. The car had been out of service 16 years.

Removal of Lackawanna Paint Shops.

The paint shops of the D. L. & W. R.R., located at Kingston, Pa., will be closed and the work heretofore carried on at this place will be done at the Scranton shops. Thirty-three men were employed at the Kingston shops, which were used for painting passenger coaches.

Public Work—California.

The annual report of the Chief of Engineers of the United States Army for the next fiscal year includes appropriations for river and harbor improvements on the Pacific Coast as follows: San Luis Obispo Harbor, \$150,000; San Francisco Harbor, removing Arch and Shag rocks, \$170,000; Oakland Harbor, \$180,000; for the improvement of the Sacramento River, \$25,000 in addition to the remaining fund of \$64,000; Petaluma Creek, \$4,000; Humboldt Harbor, \$1,200 in addition to the remaining balance of \$50,000. It is also estimated that \$500,000 will be required in subsequent appropriations to complete existing projects.

Northern Pacific Bridges.

During the year ended June 30 last the Northern Pacific disposed of 230 timber bridges, aggregating 26,819 lineal feet, by filling. Twelve bridges of timber were replaced by steel girders, amounting to 1,224 ft., and one timber bridge by steel trusses, 204 ft., making a total of 243 bridges improved or filled, aggregating 28,247 ft., or 5.35 miles.

On June 30 there existed 10,941 bridges and culverts, with an aggregate length of 452,752 ft., or 85.75 miles, which includes 3,375 steel, iron and stone permanent structures, having an aggregate length of 32,405 lineal feet; 7,566 Howe combination trusses, trestles, pile bridges and culverts of an aggregate length of 420,347 ft. The purchase of the Montana Union, Washington Central and Spokane & Seattle railroads and the construction of the Souris River, Clark's Ford, Gaylord & Ruby Valley, Lewiston extension and Hoquiam branches added 1,116 bridges and culverts, having an aggregate length of 30,843 ft., or 5.84 miles. The construction of culverts through embankments required 578 iron-pipe culverts of various diameters, 1 concrete-arch culvert and 5 stone-box culverts. To June 30 this year there have been replaced 2,715 timber bridges, exclusive of culverts, having an aggregate length of 359,154 ft., or 68.02 miles. Fourteen steel bridges with masonry piers, authorized during the preceding year, have been completed. Authority has been given to build 14 steel bridges during the present working season, and the work is now in progress.

Japan Railroad Notes.

It has been decided to establish refreshment counters in all the important stations on the lines of the Imperial Government system. Several caterers were asked to bid for the privilege of maintaining these restaurants, and it was expected that the first would be opened at the Shimbashi (Tokio) station in October.

The work of building the Jono Railroad was begun Sept. 10. The road is to extend from Kawashima in Makabe district, Hitachi, through Kugeda, Maoka, Masuko (in Haga district) and Mukalda-mura (Nasu district) to Karasuyama (Tochigi prefecture), a distance of about 31 miles. The first section of 12 miles (Kawashima to Naoka) is to be finished by March, 1900, and will cost about \$225,000. The lines will pass through important manufacturing and agricultural centres.

The Railroad Day in Switzerland.

In the Parliament of the Swiss Confederacy, recently, after a discussion over the legal length of a day's work by employees engaged in operating the railroads, it was fixed at a maximum of 11 hours, by a vote, however, of only 50 against 48 who favored a ten-hour day.

Boilers and Engines in Guadalupe.

The United States Consul at Guadalupe says: "I have been asked to procure information regarding steam boilers, engines, etc., for the largest machine shop here. This shop is connected with the steamboat line of the island. The manager particularly desires information regarding portable steam boilers, on wheels; marine engines for small steamers; marine boilers; steam and safety valves; lubricators; steam and vacuum gages; ordinary steam pumps; ordinary pumps; steam fire engines, small; centrifugal pumps; horsepower rigs, with and without shafting or other gear for transmitting power. In every case illustrated catalogues, in French if possible, are desired and the following information: Weights, net and boxed or packed for shipment; dimensions; price f. o. b. New York City. Exterior elegance and beauty of appearance are not so much desired as solidity, efficacy and cheapness. I shall be pleased to receive catalogues, price, and discount lists from manufacturers of the various articles above enumerated, and will do all in my power to foster the introduction of our machinery here. To succeed, however, honest workmanship, good materials, absence of useless and expensive adornment, and low prices are imperative. These people are slow to change, and if our goods can once get a foothold here, we can hold the trade for all time."

Bids for Six New Cruisers.

Bids for six protected cruisers, authorized by Congress, were opened at the Navy Department Nov. 1. The bidders were as follows: William R. Trigg Shipbuilding Company, Richmond, Va.; Moran Brothers Company, Seattle, Wash.; Fall River Engine Company, Massachusetts; Burleigh Dry Dock Company, Port Richmond, N. Y.; Neafe & Levy, Philadelphia; Townsend & Downey, New York; Columbia Iron

Works, Baltimore; Union Iron Works, San Francisco; Bath Iron Works, Maine; Lewis Nixon & Co., Elizabethport, N. J.

Prize Essays on Railroad Law.

The International Society of Comparative Legal and Economic Science offers a prize of 1,000 marks (\$238) for the best essay on "The Criminal Liability of Railroads in the Chief European States (with eventual regard to the United States), described historically and according to their economic effect." Essays must be delivered to the Secretary of the Society, Dr. Kronecker, Berlin W., Kurfürstendamm 241. They may be written in German, French or English, and must be provided with a motto, which shall be also on a sealed envelope containing the author's name. The judges to award the prize are: Dr. T. M. C. Asser, The Hague, Holland; Dr. George Eger, Berlin; Dr. Wm. Hewins, Director of the London School of Economics and Political Science, and Dr. Friedrich Meili, Professor of Law, Zurich.

A Japanese Law which is Needed in America.

Persons who travel by the Government Tokaido or the Nippon railroad must be struck by the spirit of enterprise as shown by the advertisements along the line. Every station, the approaches to every station, and every known spot along the road is well covered with advertising placards. Most of the placards are rather tastefully designed and may even add to the beauty of the scenery; but there ought to be some limit. . . . The Osaka Local Office lately issued notice announcing that "any advertisements in the open air which are considered detrimental to public order or morals or to natural beauty may be ordered removed and that disobedience to such order will be punished by a fine not exceeding 5 yen or a period of confinement in prison corresponding to it."—The Japan Times.

The Jungfrau Railroad.

The second section of the Jungfrau Railroad was opened for traffic Aug. 1. The first section is from Scheidegg to the Elger Glacier; the second from the glacier to a point 327 ft. below the summit of the Rothstock, which is about 8,000 ft. above sea level. The second section is mostly in a tunnel, but the train emerges at the station, and a road has been built thence to the summit of the Rothstock and another to a projecting ledge a little lower, which gives a wonderful view over the Grindelwald valley. Fares for the round trip are three francs to Elger Glacier, and five francs to Rothstock. The further extension was begun as soon as the tourist season was over.

The Soo Canals.

Following is an abstract of the statistical report of lake commerce through the canals at Sault Ste. Marie, Michigan and Ontario for the month of October: Grain, 5,776,111 bushels; iron ore, 2,211,783 net tons; wheat, 9,777,091 bushels; coal, hard, 126,676 net tons; coal, soft, 430,734 net tons.

East bound freight, net tons	3,005,844
West bound freight, net tons	664,957

Total freight, net tons	3,760,601
Total craft through United States Canal	2,480
Total craft through Canadian Canal	464

Total registered tonnage through U. S. Canal	2,923,978
Total registered tonnage through Can. Canal	451,068
	3,375,046

Remarkable Run on the Pennsylvania.

On Oct. 7 a 10-wheel engine on the Pennsylvania Lines West of Pittsburgh made a remarkable run. This engine is one of the Class G-3, being No. 278. It has 68 in. drivers and has been in passenger service for six or seven years. In the month of September this engine made 13,729 miles. Oct. 7 the engine picked up the Chicago Limited (No. 5) at Ft. Wayne, being a full train of six cars, and these are heavy cars. The train was taken through from Ft. Wayne to Chicago in 2 hours and 50 minutes, making up one hour on schedule time. The average of miles per hour was 52.2, which includes some slow running within the Chicago limits. In the course of this run the train made 21.5 miles from Valparaiso to Clarke Junction in 16 minutes, there being four railroad crossings in that distance. The rate was 80.625 miles an hour, sustained for 21.5 miles, which, if not a record (considering weight, distance and speed), is certainly a grand performance. It is interesting to compare the performance of this engine with the run of the Oregon. That ship ran from San Francisco to Key West, a distance of 15,960 miles, in 37 days, making a running speed (not including the seven stops) of approximately 13.2 miles an hour. Then she went into the fight of July 3 and astonished the world with her speed; but when we come down to a feat of endurance we find an average locomotive doing a thing just as remarkable and everyone takes it as a matter of course, which is the best testimony we could get of the every-day efficiency of the locomotive.

The Lake Street Elevated.

The differences between the town of Cicero and the Lake Street Elevated, which resulted in the stoppage of service to Oak Park by that road, have been settled and the service resumed. The ordinance requiring the road to have flagmen at all crossings has been dropped. The experimental rate of 20 rides for \$1 has also been discontinued and the rate of 12 rides for \$1 has been substituted.

General Passenger Agents.

The official report of the Proceedings of the American Association of General Passenger and Ticket Agents at the convention in Boston, Oct. 17 and 18, shows that the report on a revised form for the contract of interline tickets was adopted, but with the understanding that the companies might continue the present practice of honoring through to destination a ticket presented to the final road before expiration. This exception to the contract is not, however, to appear on the ticket. The convention passed a resolution that it was impracticable to have a national interchangeable mileage ticket.

Chicago Drainage Canal.

The Trustees of the Chicago Sanitary District on Nov. 7 gave an excursion down the Drainage Canal to several hundred persons. Four special trains ran over the Atchison, Topeka & Santa Fe, and stops were made at the principal points along the channel. On Nov. 2 water was turned into the By-pass near the Adams St. bridge, Chicago. This By-pass is one of three built along the Chicago River to increase its capacity. It is about 50 ft. wide, 300 ft. long and 17 ft. deep, with a capacity of 100,000 cu. ft. of

water a minute. It was built by Lydon & Drews and cost \$150,000. The By-pass at Jackson Boulevard will be finished in about two weeks. The Drainage Board, to push the work on the canal, will hire additional men and teams and charge the cost to the several contractors.

A conference was held Nov. 2 between the Chicago City officials and the Trustees of the Sanitary District at which arrangements were made for the execution of a contract for building and equipping the pumping station at Thirty-ninth St. between Lake Michigan and the Illinois Central tracks. A year ago the Sanitary District agreed to maintain a pumping station at this point if the city built the conduit, and a formal agreement to carry out these ordinances, which were previously noted in this column, will now be made. Power must be supplied at this station to force 120,000 cu. ft. of water a minute through the intercepting sewer conduit. A building will be built and three large pumps installed. It is expected that bids for the building and pumps will soon be asked and that the work will take about one year and cost \$400,000.

The injunction proceedings begun by Attorney General Akin of Illinois against the Sanitary District as noted last week in this column have been transferred to the U. S. Circuit Court at Chicago, on motion of the defendant. The Illinois and Michigan Canal Commissioners presented arguments before Judge Kohlsaat Nov. 3 on a motion to remand the case to the State Court at Joliet, and a decision on this point is expected this week. At a conference between Governor Tanner of Illinois and representatives of the Sanitary District in Chicago Nov. 5, Governor Tanner said that he was in favor of opening the Drainage Canal as soon as possible and that the action brought by the State for the Illinois and Michigan Canal Commissioners must be considered as a friendly suit to determine who must furnish the old canal with water and maintain the Summit level. (Nov. 3, p. 766.)

Mr. Parsons on China.

Last Thursday night Mr. William Barclay Parsons, M. Am. Soc. C. E., gave a lecture before the Engineers' Club of New York City describing some of his work and adventures in China. In his reconnaissance of the line from Hankow to Canton he succeeded in getting many fine photographs, and his lecture was illustrated by lantern slides from these and a route map.

B. & A. Gratitudes.

Boston & Albany officials say, in answer to queries as to why old employees of the company who have resigned during the past few months have not received the gratuity of one year's salary granted to employees after being in the employ of the company for more than 25 years, that a certain fund is set aside by the company and the interest realized from the fund is used in paying the pensions. The resignations lately have been numerous and there is delay because there is not enough on hand to pay all at the present time.—Albany Argus.

Complying With the Law.

The shops of the Atchison, Topeka & Santa Fe will soon take in for repairs three of the most important freight cars belonging to the company. These are three miniature cars, two box and one platform, which are used by the lawyers of the road in explaining to courts and juries in damage suits the conditions under which brakemen have to do their work and are sometimes injured. The platform car carries a load of long timbers. These cars are going into the shops to be fitted with automatic couplers and air brake apparatus. These little models usually stand in the office of the General Attorney at Topeka, but it is said that they have done service at a great many county seats throughout the lines of the company from Chicago to Albuquerque and El Paso.

Lake Notes.

The Chicago Terminal Elevator Company has received three Erie Canal boats, recently bought at Buffalo, which are to be used in the grain transfer business at Chicago.

A. B. Wolvin of Duluth has ordered two steel steamers from the American Shipbuilding Company, to have a capacity of 3,000 tons of ore each, and to cost \$185,000 each. It is understood that the steamers will be used in Montreal traffic through the St. Lawrence canals.

Foley Bros., of St. Paul, have been awarded contract for building an ore dock at Allouez Bay, in which Mr. J. J. Hill is largely interested. The contract price is \$200,000. The dock will be the highest on Lake Superior and will have a capacity of 62,000 tons of ore. The dredging has already been done and the dock is to be completed before the opening of navigation next season.

It is reported that Capt. Alexander McDougall, A. B. Wolvin and others are interested with Canadian capitalists in forming a syndicate to build a line of steel vessels at Collingwood to operate in connection with an ocean line from Montreal, the lake line to go through the St. Lawrence canals.

Technical Schools.

Washington University, St. Louis.—The competition for the selection of an architect for the University buildings was held in St. Louis Oct. 23-27. Nine architects entered the competition, the terms of which were practically decided by the six architects asked to compete, who were invited to St. Louis to become familiar with the needs of the University. The Board of Trustees secured the services of Messrs. Walter Cook of New York and R. D. Andrews and R. Clifton Sturges of Boston as advising architects to the Board, which was represented by a committee of five of its members, Chancellor W. S. Chaplin of the University being the ninth member of the jury. The plans were received without any names or marks to identify their authors. After being in session from Oct. 23 to 27, the jury unanimously reported in favor of the plans submitted by Messrs. Cope & Stewardson, of Philadelphia. These gentlemen have built most of the recent buildings of the University of Pennsylvania, nearly all those at Bryn Mawr College and Blair Hall at Princeton. The general plan of the University grounds and the style of architecture for the buildings have not yet been decided upon, but are under consideration by the whole Board of Trustees with the advice of the architects. Mr. Walter Cope arrived in St. Louis last week and after further study of the problem will proceed at once to prepare the final plans. It is expected that the actual construction of the buildings will begin in March next. Mar. 24, p. 215; Apr. 7, p. 250; Sept. 29, p. 682.)

LOCOMOTIVE BUILDING.

The Arkansas Midland has ordered one locomotive from the Baldwin Locomotive Works.

The Cooke Locomotive & Machine Co. is building one locomotive for the Pittsburgh, Bessemer & Lake Erie.

We are reliably, but not officially, informed that the Hocking Valley will order from six to 10 locomotives.

The Lima Locomotive & Machine Co. has an order for one locomotive for the New Mexico Railway & Coal Co.

The Chicago & Eastern Illinois is in the market for six or eight locomotives. Reference to this was made last week.

The Canadian Pacific has placed an order with the Canadian Locomotive & Engine Co. for 10 compound consolidation engines.

The Pennsylvania will build at its Juniata shops 113 locomotives, of which 35 will be Class G-4 passenger engines, 55 Class G 4-A freight engines, 13 Class L passenger engines and 10 Class H-6 engines.

The Chicago, Indianapolis & Louisville is said to be considering ordering two large passenger locomotives similar to the last ordered from the Brooks Locomotive Works.

It is understood that the Schenectady Locomotive Works have prepared designs for the decapod locomotives for the Minneapolis, St. Paul & Sault Ste. Marie referred to last week and that the order will probably be placed with those works.

The order for 15 locomotives given by the Northern Pacific to the Schenectady Locomotive Works, referred to last week, is simply the finishing of a contract of long standing, the details of which were given in the Railroad Gazette some months ago.

The Brooks Locomotive Works have received an order for seven 10-wheel passenger locomotives for the Delaware, Lackawanna & Western, the details of which have not yet been settled. In our issues of Sept. 29 and Oct. 13 we noted orders for locomotives given by this road.

The two simple six-wheel switching locomotives ordered by the Chicago Junction from the Schenectady Locomotive Works and noted in our issue of Oct. 27 will weigh 100,000 lbs. and have cylinders 18 in. x 24 in., wheel centers 44 in. in diam., straight top boilers with working steam pressure of 180 lbs., 220 wrought iron tubes, 2 in. in diam. and 10 ft. 11 in. long, steel fireboxes 8 ft. long and 33 in. wide at bottom, tank capacity for water 4,000 gals., and coal capacity eight tons.

The Great Northern has placed orders for 25 12-wheel engines and three six-wheel switchers with the Rogers Locomotive Co., and for 10 12-wheel engines and two switchers with the Brooks Locomotive Works. The 12-wheelers will have 19 in. x 32 in. cylinders, 55 in. driving wheels; Belpaire, extended wagon top, boilers with 315 iron tubes 2 in. in diam. and 14 ft. long and a working steam pressure of 210 lbs.; and a tender capacity for 5,000 gals. of water. The engines will weigh 184,000 lbs. with 148,000 lbs. on the driving wheels. The engine truck wheels will be 30 in. in diam., of cast steel. The switching engines will have 19 in. x 26 in. cylinders, 49 in. driving wheels, and will weigh 115,000 lbs. The boilers will be of the Belpaire, straight top, type, with 200 iron tubes 2 in. in diam. and 11 ft. 2 in. long, and a working steam pressure of 180 lbs. The tenders will have a capacity for 2,000 gals. of water.

CAR BUILDING.

We are informed that the Barrett Mfg. Co., Chicago, is considering buying some tank cars.

The Oliver & Snyder Co. has ordered 60 coke cars from the American Car & Foundry Co.

The Chicago & Alton is about to order 300 of the stock cars referred to in our issue of Oct. 20.

The Southern Pacific is reported as considering buying 2,000 or 3,000 freight cars. We have nothing official.

The Minneapolis, St. Paul & Ashland has contracted with the American Car & Foundry Co. for 50 logging cars.

The New York, New Haven & Hartford has ordered 500 more coal cars from the American Car & Foundry Co.

The New York Central & Hudson River has placed an order with the American Car & Foundry Co. for 100 ballast cars.

The American Car & Foundry Co. has received an order from the Burlington, Cedar Rapids & Northern for 60 ballast cars.

The Philadelphia & Reading is receiving bids on a large number of box cars and on 1,000 drop bottom coal cars of 70,000 lbs. capacity.

The Illinois Central is getting materials for the 500 flat cars to be built at its Burnside shops, as noted Sept. 8. The cars will be of 80,000 lbs. capacity.

We understand that the Hocking Valley has ordered 50 box cars and 50 coal cars from Pullman's Palace Car Co. in addition to the 1,000 box cars noted last week.

The American Car & Foundry Co. has received orders from various railroads and private companies for 10 snow plow cars, 10 logging cars, 25 box cars, and five passenger cars.

In addition to the specifications given last week, the passenger cars of the Illinois Central will be equipped with the Safety Car Heating & Lighting Co.'s system of steam heat.

We understand that the Seaboard Air Line is building cars at its shops at the rate of about 100 a month and will place orders for box cars outside to include 250 box cars for the Florida Central & Peninsular.

We are officially informed that the Western New York & Pennsylvania on Oct. 16 ordered 50 steel box cars of 80,000 lbs. capacity, from the Pressed Steel Car Co. This road ordered 150 drop bottom steel gondola cars of 100,000 lbs. capacity in August, as noted in our issues of Aug. 18 and 25.

In our issue of Oct. 27 we noted an order for 1,300 cars given by the Missouri Pacific to the American Car & Foundry Co. The order was for 1,000 box cars and 300 coal cars, all of 60,000 lbs. capacity. The box cars will be 33 ft. 10½ in. long inside, 8 ft. 3¼ in. wide inside, and 6 ft. 9¼ in. high from floor to carline, and will weigh 31,400 lbs. The coal cars will be 34 ft. 3 in. long inside, 8 ft. 5¼ in. wide inside, and 3 ft. 5½ in. high at sides, and will weigh 30,000 lbs. All of these cars will have M. F. standard trucks with American Steel Foundry Co.'s steel bolsters, iron axles, National hollow brake beams, cast iron brake shoes, Westinghouse air brakes, More-Jones & Co.'s brasses, American continuous draft rigging, cast iron journal boxes with Fletcher lids, and Murphy improved Winslow roofs. The box cars will have Western Railway Equipment Co.'s flush car doors.

BRIDGE BUILDING.

ATLANTIC, MASS.—The County Commissioners will hold a meeting Nov. 25 to consider widening the bridge over the tracks on Hancock St., and for building a new bridge at Warren St., Rollaston, Norfolk County.

AUGUSTA, MICH.—The Michigan Traction Co. proposes to make a crossing over the Cincinnati Northern R.R. at Augusta. This will undoubtedly be an over-head crossing. Although no time has been fixed for the hearing, action will probably be taken during the present month.

BALTIMORE, MD.—The County Commissioners have been petitioned to take up the matter of eliminating the grade crossing of Washington Road and the Baltimore & Potomac R.R. An overhead bridge is requested.

The Baltimore & Potomac R.R. has submitted to the County Commissioners new specifications for a bridge to be built by them on Wilkens Ave.

BINGHAMTON, N. Y.—In connection with building a viaduct over Chenango St., another crossing will be built on Bevier St., across the Syracuse, Binghamton & New York R.R., and the Albany & Susquehanna (operated by the Delaware & Hudson Co.). The railroads where they cross Bevier St. are 125 ft. apart. Frank Stewart, City Council.

BRIDGEPORT, CONN.—The matter of building the bridge across the Yellow Mill Pond is again being considered.

CENTREVILLE, TENN.—Extensive repairs are to be made to a bridge near this place. Thos. Cagle, Committeeman.

CHARLESTON, S. C.—A storm last week carried the steel draw from the new bridge across Wappoo Creek, connecting James Island with the mainland.

CHICAGO, ILL.—The Chicago & Western Indiana R.R. has notified the Mayor of its acceptance of the track elevation ordinance as passed Oct. 23. The ordinance provides for the elevation of roadbeds of the following lines: The Pittsburgh, Fort Wayne & Chicago, Pittsburgh, Cincinnati, Chicago & St. Louis, the Chicago & Western Indiana, the Chicago & Grand Trunk, and the Union Stock Yards & Transit Co. Beginning at Eighteenth St. and Stewart Ave., the projected elevation on the C. & W. I. road will extend along its passenger tracks as far as 72d St. The freight tracks of this road will have another elevation from 49th St. and Wallace St. to 72d St. The Pennsylvania Co. will occupy the main elevation from 20th to 55th St. The Englewood branch of the latter company will be elevated from Stewart Ave. over Halsted St. The Grand Trunk and Stock Yards companies will elevate their tracks from 49th St. over Halsted St. A solid elevation 600 ft. wide will be made between 49th and 50th Sts. on the Western Indiana right of way. This will be the most costly piece of track elevation in the city.

City Engineer Ericson will ask bridge companies and civil engineers to submit designs for bascule bridges to be built in future across the Chicago River. The \$10,000 set aside by the City Council for preparing plans for bridges will be used in making drawings for bridges for the North Branch and preparing estimates of cost and other details.

It is understood that City Engineer Ericson will advertise for competitive designs for new bridges at Weed St., Clybourn Place and Division St. and at Ninety-fifth St. over the Calumet River, the engineering department to draw up the specifications when the plans are submitted. (Nov. 3, p. 766.)

Commissioner of Public Works McGann has ordered plans prepared for new bridges to replace those at Weed St., Clybourn Place, 95th St. and Division St., over the Calumet River. The total cost of these is about \$650,000. (Oct. 13, p. 716.)

CINCINNATI, O.—The matter of building a viaduct on Harrison Ave. has been taken up by the Board of City Affairs.

CLEVELAND, O.—The city will replace the railroad grade crossing of the Lake Shore & Michigan Southern at Holton St. with a plate girder iron bridge about 60 ft. long. No plans have been agreed upon.

COHOES, N. Y.—The Delaware & Hudson R.R. has prepared plans for the proposed overhead crossing at Ontario St. The bridge will consist of three spans—one about 54 ft., and two each of about 40 ft.

COLUMBUS, O.—A vote was taken by the County Commissioners Nov. 7 on the proposition of bridging the Olentangy River at Goodale St. This work is estimated to cost between \$35,000 and \$50,000.

COLUMBIA, S. C.—We are told that the Seaboard Air Line has in prospect several bridges near Columbia.

CRANFORD, N. J.—An electric railroad, it is stated, will build an overhead bridge on South Ave., at the junction of the Baltimore & Ohio R.R.

EAST BOSTON, MASS.—The Boston & Maine and the Boston & Albany railroads have agreed with the city upon the appointment of the East Boston Grade Crossing Commission, as follows: Geo. W. Wiggins, Wm. B. French and Edward P. Bishop. The abolition of the East Boston grade crossings will cost between \$1,000,000 and \$1,500,000, of which the state will pay 30 per cent., the city 20 per cent., and the railroads 50 per cent.

GRAND RAPIDS, MICH.—The Chicago & West Michigan proposes to alter the railroad bridge across the Kalamazoo River. A draw will probably be put in.

GREENWICH, CONN.—A bridge, 190 ft. long, will be built by this town over the Mianus River.

HARTFORD, CONN.—The Connecticut River Bridge & Highway District Commission has under consideration several plans for a bridge which is proposed across the Connecticut River. One design includes a viaduct from Main St. to the river across the Valley RR. tracks, with a clearance of 21 ft. and a bridge over the river of four spans.

HAMILTON, ONT.—The City desires to have some changes made to the bridge over the Grand Trunk Ry. north of the canal.

HARTLAND, B. C.—Tenders for building a bridge are asked by the Secretary, S. S. Miller.

HOQUIAM, WASH.—We are told that the combination steel and wooden bridge to be built over the Hoquiam River in Chehalis County will be by the Twin City Electric Ry. Co. It will be a draw span structure 260 ft. long, and the estimated cost is between \$7,000 and \$9,000. Philip S. Locke, Secretary of Railroad Company, will receive the proposals when the plans are made. (Nov. 3, p. 767.)

JOHNSTOWN, N. Y.—A steel bridge of 50 ft. span will be built across Townsend Ave. by an electric railroad operating here.

JOLIET, ILL.—An ordinance is before the Councils granting the Sanitary District of Chicago permission to remove the present bridge across the Des Plaines River at Jefferson St., and build a new steel bridge, 42 ft. span and 66 ft. wide.

KERN, CAL.—The bridge petitioned for across the Kern River at Kern will be a wooden structure and cost about \$3,000. I. L. Miller, Clerk, Board of Supervisors, Kern Co.

KINGSTON, ONT.—The City Clerk and the County Council will consider building a subway beneath the Grand Trunk tracks at Montreal St.

KRICK'S MILL, PA.—Viewers have been appointed for a bridge for Berks County, crossing the Tulpehocken Creek.

MEMPHIS, TENN.—An iron bridge will be built over Wolf River, according to report, at a cost of about \$5,800. Robert Richardson, County Engineer.

MINAUS, CONN.—A committee has been appointed to consider the matter of building an iron bridge. C. D. Allyn may be addressed.

MORRIS, ILL.—C. N. Stevens, Chairman of the Board of County Supervisors, will receive bids in about 30 days for an iron bridge 640 ft. long, with three piers and two abutments. The estimated cost is between \$18,000 and \$25,000, to be borne jointly by the town of Morris and Grundy County. (Oct. 20, p. 734.)

NASHVILLE, TENN.—It is stated that the Tennessee Central will put in several bridges between Crossville and McMinnville.

NEW BERN, TENN.—H. C. Porter is Chairman of the committee appointed to report on the advisability of building a bridge.

NEWBURYPORT, MASS.—Extensive repairs are ordered to the Newburyport bridge.

NICOLAUS, CAL.—J. J. Watson wants information relative to building a 500 ft. drawless bridge.

NORTH CANAAN, CONN.—An iron bridge over Blackberry River, to replace an old structure, is estimated to cost \$2,000. J. N. Van Deusen may be addressed.

NORTHVILLE, MICH.—A crossing of the Detroit & Northwestern over the Flint & Pere Marquette RR. at Northville has been approved by the Railroad Commissioners. This is an over-head crossing, with 22 ft. clear head room. The principal span is 42 ft. long. Plans for this structure are to be submitted for the approval of the Commissioner of Railroads within 30 days.

Another crossing which has been approved is the Detroit, Plymouth & Northville under grade crossing with the Flint & Pere Marquette RR. near Northville. Plans for this crossing are to be submitted and approved within 30 days.

OMAHA, NEB.—We are told that the matter regarding a viaduct to be built across the Union Pacific and the C. B. & Q. RR. tracks on Central Boulevard has not been taken up by the railroad people. No specifications have been made.

The Sixteenth St. viaduct injunction hearing has been placed for Nov. 8. The City Engineer suggests that the viaduct be built at Seventeenth St.

ORCHARD LAKE, MICH.—The Commissioner of Railroads has approved an over-head crossing of the Detroit & Northwestern Ry. over the Chicago & Grand Trunk Ry. at Orchard Lake, which crossing is to be built as soon as possible. Plans for the structure are to be submitted to the Commissioner of Railroads for his approval within 30 days from date of the order, and the structure is to be completed by May 1, 1900.

OTTAWA, O.—The \$10,000 of bridge bonds were recently issued by Putnam County for repairing old bridges and building new ones.

PAVILION CENTER, N. Y.—The Buffalo, Rochester & Pittsburgh RR. Co., according to report, will build an underground crossing in this town. The cost will be divided between the state, the city and the railroad.

PHILADELPHIA, PA.—An ordinance will soon be introduced in the City Council for a new bridge over Coopers Creek, between Kaighn's Ave. and Federal St. The bridge, irrespective of the right of way, will cost \$10,000.

PLYMOUTH, PA.—The Borough Council is considering building a bridge across the Susquehanna River at Buttonwoods. Morgan V. Lewis, member of the Council.

POINT ARENA, CAL.—Sealed proposals for a new bridge across Garcia River, in Fifth Supervisor District, will be received Nov. 15, according to plans and specifications on file with Hale McCowen, County Clerk.

READING, PA.—A committee consisting of several Councilmen and the City Engineer has been appointed to confer with the Philadelphia & Reading relative to building the proposed bridge over the railroad tracks at either Spring St. or some point between Eighth and Sixth Sts. Last February an

ordinance was before the Council appropriating \$60,000 for this work.

ROCKFORD, ILL.—The Tri-City Ry. Co. has let a contract for building its bridges from Forty-second St., in Rock Island, to the Rock Island Arsenal, to the Chicago Bridge & Iron Co., at \$15,000.

ROCKY HILL, CONN.—The Railroad Commissioners have granted permission to J. H. Cook Co. to build a bridge across the Valley Branch of the Consolidated Road. The bridge will be 22 ft. in the clear and 12 ft. wide.

ST. CLAIR, MICH.—The Rapid Ry. Co. desires to make a crossing of the Michigan Central R.R. in St. Clair and is now preparing plans for an over-head bridge at this point.

SCRANTON, PA.—The County Court has been petitioned for a bridge over Whitney's Creek; also for a bridge over the West Branch of Fall Brook.

A bridge is petitioned for in Scott Township over the South Branch of the Tunkhannock Creek.

SEATTLE, WASH.—The County Commissioners will receive bids Dec. 1 for a combination bridge of 125 ft. span over the Cedar River which is estimated to cost \$1,500 to \$2,000. There are two other bridges to be built in the near future costing \$10,000 to \$15,000 each. No plans are prepared. E. N. Wood, Deputy County Auditor, Kings County.

SENECA FALLS, N. Y.—Reports state that the State Department of Public Works is taking steps to build the proposed bridge over the canal at Rumsey St. A bill was before the Legislature last April appropriating \$8,000 for this bridge.

SIOUX CITY, IA.—The City Engineer is preparing plans for a new wagon bridge on the Sargent Bluff road.

SMITHTOWN, N. Y.—The State Railroad Commissioners have determined that the highway known as the road leading from Smithtown to Skunk Meadow, in Suffolk County, shall be eliminated at two points east of Kings Park Station, necessitating, it is said, two bridges.

SPOKANE, WASH.—The Great Northern has made application to build through Spokane and build bridges and viaducts.

TIBURON, CAL.—A bridge is proposed by Martin County across the river between Tiburon and Belvedere.

TISKILWA, ILL.—Sealed proposals for designs and building four single track and one double track steel highway bridges over the Illinois and Mississippi Canal, near Tiskilwa, Ill., and Wyand, Ill., will be received at the U. S. Engineer Office, 1637 Indiana Ave., Chicago, Ill., until 12 noon (central time), Nov. 24. Information can also be had from Assistant Engineer Jas. C. Long, Tiskilwa, Ill. W. L. Marshall, Maj., Engrs.

TORONTO, ONT.—The bridge which will be built at Sunnyside over the Grand Trunk Ry. tracks will be by the city and will cost probably \$60,000 to \$65,000. The cost will be borne by the city, the Grand Trunk Ry. and the Toronto Ry. Co. It will probably be a steel structure. No plans are yet determined upon. (Nov. 3, p. 767.)

TRENTON, MO.—P. S. Vannatta, Borough Commissioner, is receiving proposals for a bridge across Wolf Creek, and repairing of other bridges.

VICTORIA, B. C.—The bridges at James Bay, Rock Bay and Point Ellice are declared not safe for heavy traffic. The City Engineer, C. H. Fopp, will report on the advisability of building new ones.

WASECA, MINN.—Waseca and Blue Earth counties, according to report, will build a bridge on the county line across the Le Sueur River, about 12 miles from this place.

WAVERLY, N. Y.—Reports state that a \$16,000 bridge will be built across the Erie and the Lehigh Valley railroad tracks.

WAYANET, ILL.—See Tiskilwa, Ill.

WAYCROSS, GA.—Reports state that the new railroad being surveyed from Augusta to Valdosta will need several bridges. Captain T. J. James is reported interested.

WEBB CITY, MO.—The County Court has been petitioned to build a bridge across Center Creek.

WEST BAY CITY, MICH.—An application for an over-head crossing of the Bay Cities Consolidated Co. on Washington St. in West Bay City is pending with the Railroad Commissioner. A hearing will be held Dec. 12.

WEST BOSTON, MASS.—The Railroad Commissioners, Oct. 30, heard argument in relation to the electric railroad crossings of the New York, New Haven & Hartford in West Boston and in East Boston. Overhead crossings on trestles are advocated.

WILKESBARRE, PA.—The Grand Jury has 67 applications for bridges to be built in various sections of the county. One large project is in Marcy Township, near the county line, to cost \$9,000. The others are to cost sums ranging from \$500 to \$5,000. The total cost of all the proposed bridges will be over \$50,000. The bridge fund amounts to only \$15,000.

An appropriation of \$17,175 has been made, according to report, by the county for 23 stone arch bridges varying in cost from \$150 to \$8,000.

WILLIAMSPORT, PA.—Viewers have been appointed for a county bridge across Mill Run in Hepburn Township.

WINNIPEG, MAN.—A subway under the Canadian Pacific tracks in connection with a proposed hotel, total cost \$75,000, will be voted on soon.

Other Structures.

AVILLA, IND.—We are told that there is some probability of the Grand Rapids & Indiana RR. building a new passenger depot at this place in connection with the B. & O.

CAMBRIDGE, MASS.—Major Henry Lee Higginson is reported to have given \$150,000 to build and equip a building for the Harvard University Club.

CHICAGO, ILL.—Reports state that Al. Hayman of New York, and W. J. Davis have secured the old First Regiment Armory building and lot on Jackson Boulevard, near Michigan Ave., upon which they will build a theater. The new building will be fire-proof and cost \$150,000.

In the U. S. Circuit Court Judge Kohlsaat dismissed the injunction granted by the Superior Court of Cook County on application of Montgomery Ward last September, by which work was stopped on the Annex to the temporary postoffice building on the lake front. The Congress Construction Co., which has the contract for the Annex, can now continue the work.

A report states that a new 12-story hotel is to be built at the northwest corner of Monroe and State Sts. The hotel will cover a plot 130 ft. by 97 feet. C. H. Holmes, of New York, is mentioned as the agent of capitalists in the enterprise.

Hibbard, Spencer, Bartlett & Co. have bought from Senator Proctor, of Vermont, 127 ft. of dock frontage on the north side of the Chicago River, east of St. Clair St. and near the mouth of the river, for \$90,000. The land fronts 120 ft. on North Water St., 127 ft. south on the main river, 421 ft. west adjacent to the docks and freight houses of the Western Transit Co. and 463 ft. east adjoining the docks of the Lehigh Transportation Co. The tracks of the Chicago & Northwestern run along the north front and the Illinois Central tracks are 500 ft. east. This land will be at once improved by warehouse buildings to take the place of the present stores of the company at the northeast corner of Wabash Ave. and Lake St., which will probably be used hereafter as offices and sample rooms.

The Eighth Presbyterian Church will build a church at the northeast corner of Washington Boulevard and Robey St. Church & Jobson are the architects. Rev. T. D. Wallace may be addressed.

CLEVELAND, O.—The Pennsylvania Co. will build an additional dock 500 ft. long in the East harbor, at a cost of about \$60,000, and will also build a coal-handling plant.

DECATUR, ILL.—We are told that the Wabash RR. does not propose building a union depot at Decatur, but the Illinois Central and the Wabash will each build separate depots, adjacent to each other. The plans are not all completed. Both stations will be located within a few hundred feet of the present station.

HANOVER, PA.—The Western Maryland RR. is building a brick building on Railroad St., Hanover, which will be used for the division offices of the Baltimore & Harrisburg RR., the Second Division of the W. M. The building is three stories in height and 50 ft. square, and will cost \$12,000. John Cowen of Baltimore has the contract.

HONESDALE, PA.—The Delaware & Hudson will build a new station here. The building will be 25 x 60 ft.

MEDFORD, ORE.—The Southern Pacific Co. will build a depot at this point.

MILWAUKEE, WIS.—Pabst Brewing Co. will build a mill to cost \$50,000, on Hanover St.

NEWPORT, R. I.—The Governors of the Casino are reported to have ordered extensive improvements.

NEW YORK, N. Y.—H. Clausen & Son Brewing Co. are taking estimates on a brick and iron fireproof brew house to be erected at 309 E. 47th St. The New York Gas & Electric Light, Heat & Power Co., 57 Duane St., are still receiving estimates for a 3-story brick and stone power house at First Ave. and East River, between 38th and 39th Sts. The contractor will be required to furnish a bond of \$100,000. The work is to be completed by Nov. 1, 1900.

The Treasury Department has accepted the plans of Mr. Cass Gilbert for the new New York Custom House Bldg.

OMAHA, NEB.—The Chicago & Northwestern, reports state, will spend \$225,000 on improvements which include a union station for the Northwestern, the Omaha and the U. P.

PHILADELPHIA, PA.—General Haywood, United States Marine Corps, has recommended a new barracks building at League Island, to cost about \$100,000.

PITTSBURG, PA.—At the "founders' day" exercises the report was confirmed that Mr. Andrew Carnegie would build an addition to the Pittsburgh Carnegie Library and Museum at a cost of \$1,750,000.

The Pressed Steel Car Co. is having plans prepared for additional ships at its Woods Run plant. The total cost of the improvements is estimated at \$200,000.

RICHMOND, VA.—The Charlotte Williams Hospital will be built at a cost of about \$100,000. Robert S. Boshier, President.

RIVERSIDE, N. J.—Okie, Duhring & Ziegler, Architects, 1420 Chestnut St., Philadelphia, have completed plans and specifications for a brick, stone and iron framed factory, to be built at Riverside for the Riverside Metal Co. It is to be 100 x 300 ft.

SAN FRANCISCO, CAL.—The German General Benevolent Society, according to report, proposes to build a hospital at a cost of \$250,000. H. Fortman, 418 Suto St.

SIOUX CITY, IA.—It is reported that the Chicago, St. Paul, Minneapolis & Omaha will make extensive improvements in the shops and yards at Sioux City, to cost in the neighborhood of \$225,000. The shops will be practically rebuilt.

TACOMA, WASH.—Reports state that the Northern Pacific will build a large grain elevator in Tacoma.

TORONTO, ONT.—A company has been formed to build eight summer hotels in connection with the Grand Trunk Ry. system. Frederick Smiley is Secretary. Each hotel will accommodate 300 guests and cost about \$100,000.

TRENTON, N. J.—An armory will be built for the Second Regiment, also an arsenal building to cost \$250,000. Capt. L. N. Clayton may be addressed.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Mexican Ry.—First preferred, 3% per cent.
Mexican Southern.—One and a half per cent.
Pennsylvania.—Semiannual, 2½ per cent., payable Nov. 29.

Meetings and conventions of railroad associations and technical societies will be held as follows:

American Society of Civil Engineers.—Meets at the

house of the Society, 220 W. 57th St., New York City, on the first and third Wednesdays in each month, at 8 p. m. C. W. Hunt, Secretary, 220 W. 57th St., N. Y. City.

American Society of Mechanical Engineers.—Meets at 12 W. 31st St., New York City, on the first Tuesday of each month from October to June, except December. F. R. Hutton, Secretary. The date set for the approaching convention is Dec. 5 to 8, 1899.

Association of Engineers of Virginia.—Holds its formal meetings on the third Wednesday of each month from September to May, inclusive, at 710 Terry Building, Roanoke, at 5 p. m.

Boston Society of Civil Engineers.—Meets at 715 Tremont Temple, Boston, on the third Wednesday in each month, at 7.30 p. m. S. E. Tinkham, Secretary, City Hall, Boston.

Canadian Society of Civil Engineers.—Meets at its rooms, 112 Mansfield St., Montreal, P. Q., every alternate Thursday at 8 p. m.

Central Railway Club.—Meets at the Hotel Iroquois, Buffalo, N. Y., on the second Friday of January, March, May, September and November, at 10 a. m. Harry D. Vought, Secretary, 114 Fifth Ave., N. Y. City.

Chicago Electrical Association.—Meets at Room 1737, Monadnock Building, Chicago, on the first and third Fridays of each month at 8 p. m. Cloyd Marshall, Secretary, Monon Bldg., Chicago.

Civil Engineers' Club of Cleveland.—Meets in the Case Library Building, Cleveland, O., on the second Tuesday in each month at 8 p. m. Semi-monthly meetings are held on the fourth Tuesday of each month. Arthur A. Skeels, Secretary.

Civil Engineers' Society of St. Paul.—Meets on the first Monday of each month except June, July, August and September.

Denver Society of Civil Engineers.—Meets at 36 Jacobson Bldg., Denver, Colo., on the second Tuesday of each month except June, July, August and September. W. B. Lawson, Secretary.

Engineers' Club of Cincinnati.—Meets at the rooms of the Literary Club, 25 East Eighth St., on the third Tuesday of each month, excepting July and August, at 6.30 p. m. J. F. Wilson, Secretary, P. O. Box 333, Cincinnati, O.

Engineers' Club of Columbus (O.).—Meets at 12½ North High St. on the first and third Saturdays from September to June. H. M. Gates, 12½ N. High St., Secretary, Columbus, O.

Engineers' Club of Minneapolis.—Meets in the Public Library Building, Minneapolis, Minn., on the first Thursday in each month. H. E. Smith, Secretary, 1620 S. E. Fourth St., Minneapolis.

Engineers' Club of Philadelphia.—Meets at the house of the Club, 1122 Girard St., Philadelphia, Pa., on the first and third Saturdays of each month at 8 p. m., except during July and August. L. F. Rondinella, Secretary.

Engineers' Club of St. Louis.—Meets in the Missouri Historical Society Building, corner Sixteenth St. and Lucas Place, St. Louis, on the first and third Wednesdays in each month. Richard McCulloch, Secretary, 240 N. Spring Ave., St. Louis.

Engineering Association of the South.—Meets in the Berry Block, Nashville, Tenn., on the second Thursday of each month. H. M. Jones, Secretary, 1000 Broad St., Nashville.

Engineers' Society of Western New York.—Holds regular meetings on the first Monday in each month, except in the months of July and August, at the Buffalo Library Building. H. J. Marsh, Secretary.

Engineers' Society of Western Pennsylvania.—Meets at 410 Penn Ave., Pittsburgh, Pa., on the third Tuesday in each month, at 7.30 p. m. R. A. Fessenden, Secretary.

Franklin Institute.—Meets at 8 p. m. on the third Wednesday of each month, except July and August, at 15 S. Seventh St., Philadelphia, Pa. Wm. H. Wahl, Secretary.

Locomotive Foremen's Club.—Meets every second Tuesday in the club room of the Correspondence School of Locomotive Engineers and Firemen, 335 Dearborn St., Chicago.

Louisiana Engineering Society.—Meets on the second Monday of each month at 8 p. m., at 712 Union St., New Orleans, La. J. F. Coleman, Secretary.

Montana Society of Civil Engineers.—Meets in Butte, Mont., on the third Saturday in each month at 7.30 p. m. A. S. Hovey, Secretary.

New England Railroad Club.—Meets at Pierce Hall, Copley Square, Boston, Mass., on the second Tuesday of each month. Edward L. Janes, Secretary, P. O. Box 1158, Boston, Mass.

New York Railroad Club.—Meets at 12 W. 31st St., New York City, on the third Thursday in each month at 8 p. m., excepting June, July and August. W. W. Wheatley, Secretary, 168 Montague St., Brooklyn.

Northwest Railway Club.—Meets on the first Tuesday after the second Monday in each month at 8 p. m., the place of meeting alternating between the West Hotel, Minneapolis, and the Ryan Hotel, St. Paul. T. A. Foque, Secretary, "Soo Line," Minneapolis, Minn.

Northwest Track & Bridge Association.—Meets at the St. Paul Union Station on the Friday following the second Wednesday of March, June, September and December, at 2.30 p. m.

Railway Signaling Club.—Meets on the second Tuesday of January, March, May, September and November. C. O. Tilton, Secretary, C. & M. & St. P. Ry., West Milwaukee, Wis.

St. Louis Railway Club.—Holds its regular meeting on the second Friday of each month at 3 p. m. H. H. Roberts, Secretary, 512 Commercial Bldg., St. Louis.

Southern and Southwestern Railway Club.—Meets at the Kimball House, Atlanta, Ga., on the second Thursday in January, April, August and November. S. A. Charplot, Secretary, Savannah, Ga.

Technical Society of the Pacific Coast.—Meets at its rooms in the Academy of Sciences Building, 819 Market St., San Francisco, Cal., on the first Friday in each month, at 8 p. m. Otto Von Geldern, Secretary.

Texas Railway Club.—Meets on the third Mondays of February and August, at place and time chosen at the previous meeting. The next meeting will be held in Austin, Tex., in February, 1900. T. H. Osborne, Secretary, Pine Bluff, Ark.

Western Foundrymen's Association.—Meets in the Great Northern Hotel, Chicago, Ill., on the third Wednesday of each month. A. Sorge, Jr., 1533 Marquette Building, Chicago, is Secretary.

Western Railway Club.—Meets on the third Tuesday of each month except June, July and August, in

the Auditorium Hotel, Chicago, Ill. J. W. Taylor, Secretary, 667 Rookery Bldg., Chicago.

Western Society of Engineers.—Meets in the Club rooms in the Monadnock Block, Chicago, Ill., on the first Wednesday of each month, except in January. Special meetings are held on the third Wednesday of each month. Nelson L. Litten, Secretary.

St. Louis Railway Club.

The paper for the meeting of the St. Louis Railway Club, held Friday afternoon, November 10, was prepared by Mr. S. M. Dolan, Master Mechanic and Master Car Builder of the Wiggins Ferry Company, the title being "The Operation of a Car Department at a Large Terminal."

New York State Association of Railway Surgeons.

This association will hold its ninth annual meeting in the Academy of Medicine, 17 West Forty-third Street, New York City, on Thursday, November 16, beginning at 9.30 a. m. The topic of the morning session will be the Physical Fitness of Railway Employees. Papers will be read by R. R. Richards, General Claim Agent of the Chicago & Northwestern; Dr. G. P. Conn, Chief Surgeon of the Boston & Maine; Dr. Joseph White, Ophthalmic Surgeon of the Chesapeake & Ohio, and L. L. Gilbert, Assistant Counsel of the Pennsylvania Lines West of Pittsburgh. The discussion will be opened by Edgar J. Rich, Attorney of the Boston & Maine; Dr. Wm. D. Middleton, Chief Surgeon of the Chicago, Rock Island & Pacific; Clark Bell; Dr. J. F. Valentine, Chief Surgeon of the Long Island road, and George Marsden, Claim Agent of the New York, Ontario & Western.

At the afternoon session there will be addresses and medical papers by President Mills and Doctors Robt. T. Morris, B. F. Curtis, John L. Eddy, and Charles E. Townsend.

The Secretary of the Association is Dr. C. B. Herick, of Troy.

American Society of Mechanical Engineers.

A meeting under the direction of the Junior Members was held at the house of the Society in New York City on Tuesday evening of this week. The paper of the evening was presented by Mr. Fred. H. Colvin, the subject being "Compound Locomotives." The paper gave for the most part a short historical sketch of the work already done and a description of the more common designs. The paper was discussed to some extent, brief references being made to the economy of the compound engine and to the advantages and disadvantages in certain designs. Reference was made to the work of Mr. E. M. Herr, Superintendent of Motive Power of the Northern Pacific, as discussed before the Western Railway Club at its March meeting. It will be remembered, from our report in the Railroad Gazette of April 28, 1899, that Mr. Herr holds that where compound locomotives are properly designed and maintained, there need be no appreciable difference in the cost of running repairs for simple and for compound locomotives. These engines were a road success. Reference was also made to the mountain tests of simple and compound engines in passenger service which showed that there was not much difference in the economy of working. His conclusion from many tests was that the ideal place for the compound was in freight service at level divisions.

Prof. F. R. Hutton told briefly what was being done at Columbia University with the Vaucain compound which was presented to the University and is now being put in place ready for experimental work. The engine has been run on a trial with compressed air and it is expected that the apparatus will be in place in a short time ready for regular tests in connection with the instruction in mechanical engineering at the University. Prof. Hutton spoke of some of the difficulties met with in arranging the apparatus and machinery for the tests and of the practical difficulty of determining accurately the size of blower required to carry off the smoke and gases when the engine was under steam. A Sturtevant 7 ft. blower will be put in and will draw the smoke and gas through flues about 100 ft. in length.

PERSONAL.

(For other personal mention see Elections and Appointments.)

—Mr. J. A. Hill, formerly General Freight Agent of the Missouri Pacific died at St. Louis, Mo., Oct. 25.

—Mr. F. E. Clarke, President of the Boston & Lowell, died suddenly at his home in Lawrence, Nov. 7, aged 69 years.

—Mr. James Dun, Chief Engineer of the Atchison, Topeka & Santa Fe, was married on Oct. 31, at St. James, Mo., to Mrs. Rucker, widow of Colonel William A. Rucker, United States Army.

—Mr. Franklin W. Spear died at his home in Milwaukee Nov. 5, aged 83. He was for 30 years in the employ of the Chicago, Milwaukee & St. Paul, being at one time General Ticket Agent, but retired 10 years ago on a pension.

—Mr. José R. Villalon, M. Am. Soc. C. E., has left the position of Assistant Engineer under Colonel Black, Corps of Engineers, U. S. A., at Havana and has become Chief Engineer of Public Works of the provinces of Matanzas and Santa Clara, Cuba. He took up his new work Nov. 1.

—Mr. M. F. Egan, Jr., died Nov. 5, at his home in Chicago, aged 46 years, leaving a widow and four children. Mr. Egan was in the service of the Union Pacific System for over 25 years and was Superintendent of Motive Power of the Union Pacific, Denver & Gulf for some time prior to Jan., 1899, when he resigned on account of failing health.

—Mr. C. S. Knight, Vice-President and General Manager of the Siemens & Halske Co. of America, has resigned and will go to New York to take up other work for the syndicate which controls the Siemens & Halske, Electric Vehicle and other companies. Mr. Knight will be succeeded by Mr. O. S. Lyford, Jr., formerly Electrical Engineer of the Siemens & Halske Co.

—Mr. Thomas B. Twombly, Sr., formerly for many years Master Mechanic of the Chicago, Rock Island & Pacific, died at his home in Chicago, Oct. 31, aged 75 years. He was born in New Hampshire in 1824 and engaged in railroad work in New England until about 1860, when he went West, and in 1867 became

Master Mechanic of the Chicago, Rock Island & Pacific, from which position he retired several years ago.

—Mr. William R. Thomas, Treasurer of the Safety Car Heating & Lighting Company, died Nov. 4 at El Paso, Tex. He went to Texas some months ago, hoping that his health would be restored, as he had been declining for some time. Mr. Thomas was with Mr. A. W. Soper, the President of the Safety Car Heating & Lighting Company, when Mr. Soper was on the Iron Mountain Railroad and has been with him ever since in one capacity or another.

—Prof. S. W. Stratton, of the Department of Physics, University of Chicago, has been appointed Director of the U. S. Bureau of Weights and Measures under the Coast and Geodetic Survey. Prof. Stratton graduated in 1884 as a mechanical engineer from the University of Illinois, and was for some time one of the Faculty of that University. In 1892 he became Assistant Professor of Physics at the University of Chicago, which position he has held since, except during the war with Spain, when he served as a lieutenant in the Navy with the Illinois Naval Reserves.

—Mr. W. F. Durant, a retired railroad contractor of Chicago, died at his home at the Auditorium Hotel in that city Nov. 5, of pneumonia, after an illness of six days. Mr. Durant was born in Massachusetts in 1823 and went to Iowa in 1848. He was a brother of Dr. T. C. Durant, and was associated with him as a contractor in building the Rock Island road. He had lived in Chicago about 30 years and retired with a fortune 18 years ago. Dr. Durant was the famous brother, however. He was of the contracting firm of Farnum & Durant who built a considerable part of the Rock Island under a contract to operate it for a term of years. The operating contract they sold to the owning company and altogether made a great deal of money in the transaction. Dr. T. C. Durant's connection with the Union Pacific was a natural development of this Rock Island connection. He was Vice-President of the Union Pacific and President of the Credit Mobilier, and, as much as any one man could be, was the builder of the Union Pacific.

—Mr. James E. Simons has resigned as Assistant Master Car Builder of the Pittsburgh & Lake Erie Railroad to take the position of Superintendent of Rolling Stock and Machinery for the Pittsburgh Coal Company, the great combination recently organized in Pittsburgh. His office will be in the Hussey Building at Pittsburgh and he took up his new duties Nov. 4. Mr. Simons was born in Devonshire, England, July 13, 1860, and began his railroad work at the Nine Elms shops of the London & South Western in 1876. He afterwards served as locomotive fireman on the same road for two years and came to America in 1881, entering the car department of the Lake Shore & Michigan Southern, where he remained five years. He then served with the Nickel Plate at Cleveland for three years and for two or three years more was joint foreman of car inspectors and repairers for the Erie and the Pittsburgh & Lake Erie at Youngstown, O. February, 1891, he took the position which he has just resigned. He has been a member of the Master Car Builders' Association since 1896 and has served on several committees.

ELECTIONS AND APPOINTMENTS.

Atlanta & West Point.—E. W. Sells has been appointed Acting Auditor of this company and the Western Railway of Alabama, with headquarters at Atlanta, Ga., succeeding Thos. J. Hunter.

Baltimore, Chesapeake & Atlantic.—The officers of this company, whose property has been sold to the Pennsylvania (See RR. News column, Sept. 8, p. 633) are: President, S. M. Prevost; Vice-President, Willard Thompson; Secretary, J. R. McClure, and Treasurer, R. W. Smith. The Directors are: S. M. Prevost, J. S. Wilson, R. B. Dixon, S. Rea, R. K. Cassatt, S. Bancroft, Jr., H. F. Kenney, J. U. Dennis, S. Wilmer, C. A. Chipley, J. P. Green, E. E. Jackson and W. Thompson.

Bismarck, Washburn & Fort Buford.—The officers of this company, referred to in the Construction column, are: President, W. D. Washburn, Minneapolis, Minn.; Vice-President, J. W. Raymond, Minneapolis; Secretary and Treasurer, C. C. Crane; Chief Engineer, O. H. Hoffman. The Directors are: W. D. Washburn, M. B. Koon, J. W. Raymond and C. M. Amsden, Minneapolis, and Clarence B. Little, of Bismarck, N. D.

Carolina Northern.—Henry Cumming has been appointed Chief Engineer, succeeding J. H. McRee, resigned.

Central Massachusetts.—Robert S. Bradley has been elected President, succeeding Samuel H. Aldrich.

Cincinnati, Richmond & Ft. Wayne.—W. R. Shelby has been elected President, succeeding W. O. Hughart, deceased.

Eastern Ry. of Minnesota (Great Northern).—D. M. Philbin, Second Vice-President, will also assume the duties of Superintendent, owing to the resignation of G. T. Slade.

Great Northern.—E. C. Hoffman has been appointed Master Mechanic, with headquarters at Breckenridge, Minn., succeeding J. C. Nolan, resigned.

Intercolonial.—James Hardwell, Division Freight Agent, has been appointed Assistant General Freight Agent of the entire system, with headquarters at Montreal. Mr. Hardwell will continue to act as Foreign Freight Agent.

Kansas City & Northern Connecting.—E. H. Shauler, heretofore General Manager, has been appointed Assistant General Manager, with headquarters at Kansas City, Mo. E. M. Collins has been appointed Chief Engineer, with headquarters at Quincy, Ill. W. J. Stoneburner has been appointed Superintendent of Transportation, with headquarters at Stanberry, Mo. Chas. E. Gibbs has been appointed General Freight Agent, with headquarters at Quincy, Ill., succeeding H. C. Orr. H. H. Kendrick has been appointed Auditor, with headquarters at Quincy, Ill., succeeding N. S. Doran. W. D. Tucker has been appointed Assistant Treasurer, with headquarters at Quincy, Ill. A. W. Quackenbush has been appointed Master Mechanic,

with headquarters at Stanberry, Mo., succeeding E. Punshon, and W. H. McHattie has been appointed Car Service Agent, with headquarters at Stanberry, Mo. Effective Nov. 1. (See Omaha, Kansas City & Eastern.)

Lake Shore & Michigan Southern.—Charles R. Tunks has been appointed Master Car Builder, with headquarters at Adrian, Mich., his jurisdiction to extend over the Detroit Division, Lansing Division and the Michigan Division east of Sturgis and Goshen, succeeding F. O. Bray, resigned. LeGrand Parish has been appointed Master Car Builder, with headquarters at Englewood, Ill., his jurisdiction to extend over the Western Division, Kalamazoo Division and the Michigan Division west of and including Goshen and Sturgis, succeeding A. L. Kendall, resigned, effective Nov. 1.

Louisville & Nashville.—Y. Van Den Berg, heretofore Traffic Manager, has been elected First Vice-President, succeeding S. R. Knott, resigned (p. 768). A. W. Graham has been appointed Traffic Manager, succeeding Mr. Van Den Berg.

Mississippi River, Hamburg & Western.—W. B. Langston has been appointed Master Mechanic, with headquarters at Hamburg, Ark., succeeding C. J. Langston, resigned.

Missouri Pacific.—W. B. Knight has been appointed Assistant General Freight Agent, with headquarters in the Equitable Bldg., St. Louis, Mo.

New York, Chicago & St. Louis.—E. E. Hart has been appointed Engineer, with headquarters at Cleveland, O., succeeding G. W. Vaughan, resigned.

Norfolk & Southern.—George M. Glazier has been appointed Auditor succeeding I. P. Jernigan, resigned. Effective Nov. 8.

Omaha, Kansas City & Eastern.—E. H. Shaufler has been appointed Assistant General Manager, with headquarters at Quincy, Ill. The headquarters of W. G. Brimson, General Manager; Chas. E. Gibbs, General Freight Agent; A. J. Bandy, General Passenger Agent; W. D. Tucker, Assistant Treasurer; H. H. Kredrick, Auditor, and E. M. Collins, Chief Engineer, have been removed from Quincy, Ill., to the Syndicate Building, Kansas City, Mo.; effective Nov. 8.

Pennsylvania Co.—Henry W. Thornton, formerly Assistant Engineer Maintenance of Way, has been appointed Engineer Maintenance of Way of the Erie & Ashtabula Division, succeeding L. G. Haas, promoted; effective Nov. 1. T. J. Rogers has been appointed Chief Train Dispatcher, succeeding C. E. McKim.

Peoria, Decatur & Evansville.—W. E. Strong has been elected a Director.

Pere Marquette.—The officers of this newly consolidated company (see RR. News column) are: President, Chas. M. Heald; Treasurer, H. C. Potter, Jr., and Secretary, J. E. Howard. The Directors are: S. T. Crapo, Clark S. McMillan, Arthur Patriarche, Henry C. Potter, Jr., Edwin Saunders, James H. Simpson, Charles M. Heald, J. E. Howard, U. B. Rogers, Russell Wallace and F. A. Nims.

Pittsburg & Lake Erie.—James E. Simons, Assistant Master Car Builder, has resigned to accept the position of Superintendent of Rolling Stock and Machinery for the Pittsburg Coal Company, effective Nov. 4.

Plant System.—J. S. Hanahan, Jr., has been appointed Commercial Agent, with headquarters at Charleston, S. C. Effective Nov. 1.

Seaboard Air Line.—A. F. Lee has been appointed Soliciting Agent, with headquarters at 30 South Third St., Philadelphia, Pa., succeeding Chas. F. Seeger, resigned, effective Nov. 1.

Southern.—This company has opened a Freight Agency at Washington College, Tenn., in charge of L. G. Gott, effective Nov. 10.

Southern Pacific.—William McKay, Car Accountant, having resigned, G. F. Richardson, Master of Transportation, will assume the duties of Car Accountant, and the office of Car Accountant is abolished.

Wheeling & Lake Erie.—F. M. Cramer has been appointed General Agent for the Traffic Department, with headquarters at Toledo, O.

RAILROAD CONSTRUCTION. New Incorporations, Surveys, Etc.

ALABAMA & VICKSBURG.—The annual report mentions the completion of the extension of the main line at Vicksburg, Miss., to the Mississippi River, increasing the length of the main track by 1.62 miles. There are two iron bridges on masonry piers, one 133 ft. long and the other 69 ft.; also a trestle 569 ft. long. The maximum grade is 1.7 per cent.

ALGOMA CENTRAL.—One mile of track is reported laid on this line from Sault Ste. Marie, Ont., north 160 miles to Missanable, and thence to Lake Superior. The section building is from Michipocoten Harbor, on the lake, eastward. (Oct. 6, p. 701.)

A Chicago press report states that a great iron, timber and transportation company is being organized under the title of the Ontario & Lake Superior Co., which is to acquire the entire capital stock of the Algoma Central Ry. and the Algoma Commercial Co.

ATCHISON, TOPEKA & SANTA FE.—Track laying is reported begun on the Eastern Oklahoma extension from Guthrie, Okla., northeast via Perkins, Stillwater and Pawnee to Coffeyville, Kan. Track is to be laid for six miles toward Perkins. (Oct. 20, p. 736.)

ATLANTA BELT.—An officer writes that this company has been incorporated to build a line 5½ miles long (with one mile of siding) extending around Atlanta, Ga., from a point on the Atlanta & West Point and the Central of Georgia at Oakland, to connect with the Georgia RR. at Inman Park. The line has been surveyed, right of way obtained and the contract for building let to A. & C. Wright & Co., of Richmond, Va. The work is of ordinary character, the maximum grade being one per cent., and the maximum curves 3°. There is to be one tunnel of about 300 ft. and several trestles, but no iron bridges.

(Oct. 27, p. 753.) Geo. C. Smith of Atlanta, is President; H. M. Abbott, Atlanta, Secretary and Treasurer, and G. F. Huggans of Montgomery, Ala., Chief Engineer. (Official.)

BALTIMORE & OHIO.—Sidings of 100 car capacity are being built at a number of points between Bellaire, O., and Newark, and between Chicago Junction and Chicago. These sidings are built with a view to double tracking some time. The new eastbound yard at Garrett, Ind., is ready for the rails and will be completed by the middle of November. Men are at work on grade reductions between Newark, O., and Chicago Junction. (Official.)

BISMARCK, WASHBURN & FORT BUFORD.—The route of this line is from Bismarck, N. D., northwest via Washburn, Coal Harbor and Fort Stevenson toward Fort Buford. The road has been graded and bridges and culverts built from Bismarck, via Arnold and Baldwin, to Wilton, about 27 miles. It has been finally located from Wilton to Washburn, and the company expects to complete it to a point 20 miles farther another season. Track will be laid between Bismarck and Wilton in the early spring. Rails and fastenings are already purchased. (July 7, p. 499.) The officers are given under Elections and Appointments. (Official.)

BOSTON & MAINE.—Grading is begun on the Manchester & Milford extension from Manchester, N. H., southwest about 10 miles, via Bedford Center and Amherst, to Milford on the Fitchburg. (Oct. 13, p. 718.)

BURLINGTON, CEDAR RAPIDS & NORTHERN.—A force of men and teams is at work on the extension from Worthington, Minn., northwest toward Canova, S. D., on the Chicago & Northwestern, about 100 miles. The company hopes to complete grading as far as Jasper this season. (Oct. 6, p. 701.)

CALIFORNIA ROADS.—The Common Council of San Diego has granted a franchise to U. S. Grant, Geo. W. Marson, Geo. H. Ballou and M. A. Luce for a railroad from that city to the Colorado River. A similar franchise was granted to Mr. Grant and his associates in 1898. (Jan. 28, 1898, p. 71.)

CANADIAN PACIFIC.—Surveys have been ordered for an extension from Rossland, B. C., to the Sophie Mt. mines.

CAPE FEAR & NORTHERN.—Arrangements are reported completed for extending this line south to Fayetteville, N. C. It is in operation between Apex and Angier. J. C. Angier of Holly Springs, N. C., is General Manager. (March 24, p. 217.)

CARRABELLE, TALLAHASSEE & GEORGIA.—The company on Aug. 31 completed work on its new terminal at Tallahassee, Fla., between the Florida Central & Peninsular crossing and the station, two miles. It has heretofore had trackage agreement and joint use of terminal facilities with the F. C. & P. at Tallahassee, but with the completion of the new terminals the company discontinued using the F. C. & P. on Sept. 1. (June 9, p. 417.)

The ultimate intention is to extend the line from Tallahassee northeast 36 miles to Thomasville, Ga. (Official.)

CATSKILL & TANNERSVILLE.—This company, which opened its extension from Otis Summit, N. Y., to Tannersville (Aug. 18, p. 588), six miles, this season, expects to continue building from Tannersville to Hunter, five miles. There has been a survey made to Hunter and right of way is being secured. There is a possibility that it may be built next spring for the next season's business. (Official.)

CENTRAL OF NEW JERSEY.—Wm. Haelig has the contract for the Middlebrook line from a point on the main line of the C. of N. J., three-fourths of a mile east of Finderne, N. J., to Chimney Rock, two miles. (June 30, p. 482.)

CHICAGO & NORTHWESTERN.—Grading is completed on the Boone County cut-off from Boone, Ia., across the Des Moines River to Ogden, 7.4 miles. Winston Bros., of Minneapolis, have the contract for grading.

The contractors have taken their outfits to Ames, where the track is to be raised about 25 ft. both east and west of the city, and grading done for a second track.

Surveyors are reported laying out a two-mile spur to connect the new Allen and Lorraine lines in Marquette County, Mich., near Cascade, with the main line. It is said that a spur is to be built this season.

CHICAGO, MILWAUKEE & ST. PAUL.—The extension from Rockwell City, Ia., to Storm Lake has been completed as far as Sac City, and shipments have already been made over the new line. Work is progressing rapidly on the section beyond Sac City, but it is hardly probable that it will be completed this season. (Sept. 29, p. 650.)

Track laying is reported in progress on the extension from a point northwest of Yankton, S. D., to run west about 20 miles via Tabor to Tyndall, and thence to the Platte River, about 88 miles. Grading is being hastened in both directions from Tyndall. (Oct. 20, p. 737.)

CHOCTAW, OKLAHOMA & GULF.—Official confirmation is received that the Choctaw & Memphis connecting line is completed from Howe, I. T., east 164 miles to Little Rock. This completes the entire line from Weatherford, Okla., east to Memphis, Tenn., 563 miles. (Oct. 20, p. 737.)

DES MOINES VALLEY.—Nearly all the grading is done on the section of this line between Bingham Lake, Ia., and Currie, 38.82 miles. The line is to run from the Iowa State line in Jackson County, Ia., northwest 108 miles, crossing the Chicago, St. Paul, Minneapolis & Omaha at Bingham Lake, and thence west through Cottonwood, Murray and Pinestone counties to the Dakota line. Track is laid from Bingham Lake westward 18 miles. No more contracts are to be let at present. It was incorporated in June of last year by officials of the Chicago, St. Paul, Minneapolis & Omaha. (June 16, p. 439.) W. A. Scott of St. Paul, Minn., is President, and C. W. Johnson, Chief Engineer. (Official.)

DETROIT & MACKINAC.—Building is reported in progress on the extension from Black River, Mich., four miles northwest of Onaway, to Sheboygan. (April 7, p. 253.)

DURHAM & CHARLOTTE.—About 25 miles is reported completed on this line from Glendon, N. C., southwest toward Charlotte. Frank D. Jones of

Glendon, N. C., is Superintendent. (Dec. 16, 1898, p. 903.)

GEORGIA ROADS.—The Durham Coal Co. of Durham, according to report, will build about 15 miles of road to reach its mines, and surveys are now in progress.

GULF & BRAZOS VALLEY.—This company expects to build next year about 100 miles of additional road up the Brazos River Valley, work to be begun in March or April. The road as projected is from a point on the Texas Pacific to run north, via Mineral Wells and Jacksboro, to Henrietta, Tex. It was completed to Mineral Wells, 11 miles, in March, and has been building this season an additional 19 miles to Jacksboro. F. A. Glass of Hearne, Tex., is President and General Manager.

GULF & SHIP ISLAND.—Grading is reported completed to within nine miles of Columbia, on the Columbia, Lumberton & Gulf extension from Lumberton, Miss., northwest 32 miles to Columbia. Trains are running as far as Baxter, about 12 miles.

Track is completed as far as Duckworth, 3½ miles beyond Williamsburg, on the extension from Hattiesburg, Miss., north via Carthage. The line is to be pushed to completion to a point four miles north of Mount Olive, where connection will be made with the Laurel Branch which is to be built toward Jackson. (Feb. 3, p. 92.)

KUSHEQUA.—The route of this company's line is from Kushequa, Pa., east 15 miles, via Newton and McKean, to Farmers Valley. Track is laid from Kushequa nine miles toward Farmers Valley, and from Farmers Valley one-half mile toward Kushequa. There are 60 men and six teams at work. Contracts will be let soon for grading five miles. The company also proposes to build a branch from Cole Creek bridge to McEwen Hollow, one mile. (Jan. 13, p. 33.) Elisha K. Kane, of Kushequa, is President, and G. H. Lyon, of Ormsby, Pa., Chief Engineer. (Official.)

ILLINOIS CENTRAL.—The Fort Dodge & Omaha extension from near Fort Dodge, Ia., southwest 128 miles to Omaha, Neb., is reported practically completed. The first train passed over the line Nov. 1. (Oct. 6, p. 701.)

KANSAS & TEXAS COAL.—The completion of this line from Excello, Mo., to Brevier, about 14 miles, was incorrectly entered two weeks ago (p. 753) under the title of Kansas & Texas Gulf.

KANSAS CITY, FORT SCOTT & MEMPHIS.—The Kansas City, Memphis & Birmingham is reported making surveys for an extension from its terminals at Birmingham, Ala., to run east to Brunswick, Ga., on the Atlantic.

LINVILLE RIVER.—This company has recently completed its line from Cranberry, N. C., southeast 12 miles to Kawana (Sept. 29, p. 685), and is to let contracts at once for relaying five miles of line with 30 to 35 lb. rails. (Official.)

LITTLE ROCK & HOT SPRINGS WESTERN.—Fully 40 per cent. of the grading is reported completed on the line of this company, successor to the Little Rock, Hot Springs & Texas, from Little Rock, Ark., southwest 53 miles to Hot Springs. Track laying is in progress at the southern end. (Sept. 29, p. 685.)

MANSFIELD SHORT LINE.—Grading is completed for about six miles on both sides of Mansfield, and track is laid for two miles out from Mansfield toward Lucas, on this line from Shelby, O., southwest 20 miles via Mansfield to Lucas. C. D. Crouch of the First National Bank, Chicago, has the contract. (July 14, p. 515.) C. W. Franch of Mansfield, O., is President, and R. M. Barbour of Nasby Bldg., Toledo, O., Secretary. (Official.)

MEXICAN CENTRAL.—The San Marcos extension is to run from La Vega to San Marcos, State of Jalisco, Mex., 29.2 miles. Hampson & Smith have the contract for grading and masonry, and it is said that the road will be completed by June 1 next. (Oct. 20, p. 737.)

The company is also building the Michoacan & Pacific extension from Yurecuaro, Mex., southeast 103 miles to Tinguindin, with a branch into the timber district. Hampson & Smith have the contract. Of this 35 miles is completed and trains are running between Yurecuaro and Zammora. (April 7, p. 253.)

The company is also building from Parral to El Rosario, State of Durango, 42 miles. The contractors are Hampson & Smith. The company expects to complete the road during the year 1900.

On these three lines large construction forces are employed and no pains are being spared to complete the work at the earliest date possible. The bridges and stations are of a permanent character, being built entirely of stone, steel and iron, and the track is being fully ballasted where the nature of the soil makes the same necessary.

The company has a large engineering force in the field for its extension from Guadalajara south about 100 miles to Zapotlan, in the State of Jalisco. (April 7, p. 253.) It is expected that building on this line toward the port of Manzanillo will be actively undertaken in December. (Official.)

MINNEAPOLIS & ST. LOUIS.—Delays caused by bad weather and non-delivery of steel have compelled the company to give up completing its line as far as Storm Lake, Ia., this season. It is expected that trains will be running from Minneapolis to Estherville, Ia., 67 miles from New Ulm, Minn., by Nov. 15. (Oct. 6, p. 701.)

MINERAL RANGE.—A company has filed a map with the Michigan State Railroad Commission for an extension of its lines in Houghton County to some copper mines. (March 17, p. 197.)

MISSOURI PACIFIC.—Surveys are reported in progress for an extension of this line from Cushman, Ark., northwest about 60 miles to Yellville in the zinc region. (May 19, p. 360.)

MORRIS, PORTAGE & MIDLAND.—This company is being organized in Manitoba to build a railroad from Morris northwest about 100 miles, via Portage la Prairie to Nepawa. It is stated that a preliminary survey will probably be made at an early date. Howell & Mathers, of Morris, are solicitors.

NEW YORK & PENNSYLVANIA.—The company expects to extend its line from Oswayo, Pa., north nine miles via Shinglehouse to Ceres, to connect with

the Pittsburgh, Shawmut & Northern. They are now completing their permanent survey and are contracting for grading and track laying. Work will not be begun before next spring. There are no large bridges. The maximum grades will be about 11 ft. per mile; the maximum curves about 6". New securities will be issued for all expenditures. (Official.)

NEW YORK, NEW HAVEN & HARTFORD.—Chas. W. Blakeslee & Sons of New Haven, Conn., are reported to have the contract for building the grade crossing of the Hartford Division at Newington, near Hartford.

NORTH & SOUTH.—This project is being revived in Missouri for a line from Marshall south about 135 miles to Springfield. Re-surveys are being made and plans are maturing for active operations. It is understood that the Sedalia, Warsaw & Southwestern, a narrow gauge line between Sedalia and Warsaw, will be obtained, if possible, and made broad gauge as a part of the line.

OHIO ROADS.—The West Point Coal Co. of Lisbon, O., expects to begin work within 90 days on the first division of its proposed line from Lisbon south-east 17 miles, via West Point, to East Liverpool.

OREGON MIDLAND.—This company has been organized at Ashland, Ore., with a capital stock of \$1,000,000, to build a railroad from Klamath Falls, Ore., southwest about 60 miles down the Klamath River to a junction with the Southern Pacific in Oregon, near the northern boundary line.

RICHMOND, PETERSBURG & CAROLINA.—The directors have decided to issue \$100,000 of bonds to hasten the completion of this line of the Seaboard Air Line's system. (Sept. 29, p. 686.)

RIO GRANDE WESTERN.—Work is to be begun soon, according to report, to complete the extension of this line from Belknap, Utah, south about eight miles to Marysvale.

ST. LOUIS, CHICAGO & ST. PAUL.—Extensive improvements are reported planned for Alton, Ill., including the laying of 12 miles of additional track-age in the yards.

SALEM & PACIFIC COAST.—Grading is completed from Falls City, Ore., to Bridgeport, four miles, on the line of this company, successor to the Luckiamute Valley & Western, which is projected to run from a point opposite Salem southwest about 90 miles, via Eola and Falls City, to Newport, on the Pacific Ocean. The company expects to let contracts for finishing the roadbed between Falls City and Salem, 22 miles, inside of 30 days. (Oct. 20, p. 737.) J. S. Talbot of Falls City is President, and M. L. Porter, Chief Engineer. (Official.)

SOUTHERN PACIFIC.—A feeder is determined upon, according to report, to run from Wible, in Kern County, Cal., southwest about 15 miles into the reclaimed lands of the lake region.

Ricker & Lee have the contract for building the Texas & New Orleans extension from Cedar, Tex., southeast 26 miles to Athens. (Oct. 6, p. 702.)

TEXAS WESTERN & CIRCLE BELT.—The company, according to report, proposes to begin building this line as soon as it can obtain the necessary rails. It is to run from Gainesville, Tex., southwest about 75 miles to Abilene. A. B. Donaldson of Gainesville is President. (April 14, p. 272.)

WABASH.—Track is reported laid as far as Moravia, on the Moulton, Albia & Des Moines extension from Moulton, Ia., north 28.3 miles to Albia. It is to be completed by the middle of the month. (Oct. 20, p. 738.)

WASHINGTON & POTOMAC.—See Railroad News column.

WESTERN MARYLAND.—Preliminary surveys are reported in progress for the Emmitsburg extension from Rockyridge, Md., south about five miles to Woodboro.

WICHITA & SOUTHERN.—The City Council of Wichita, Kan., has appropriated \$7,000 in part payment of the expenses of preliminary surveys for this line from Wichita south via South McAlester, I. T., to Denison, Tex. It is understood to be an extension of the Kansas Midland. (Oct. 20, p. 738.)

YORK SOUTHERN.—Surveys are reported in progress from Delta, Pa., south to a point on the Baltimore & Ohio near Havre de Grace, Md.

YOUNGSTOWN & RAVENNA.—This company was incorporated in Ohio Nov. 4 by J. J. Brooks, General Counsel of the Pennsylvania Co., and others for building a line from Youngstown west about 30 miles toward Ravenna. This would give the Pennsylvania Co. a short line from Pittsburgh, via Youngstown and Ravenna, to Cleveland.

GENERAL RAILROAD NEWS.

ATCHISON, TOPEKA & SANTA FE.—At the annual meeting to be held Dec. 14, a change in the by-laws will be acted upon, giving the directors authority to acquire or lease new mileage to an amount not to exceed 200 miles in any one year.

Holders of a large amount of the 4 per cent. 100-year adjustment mortgage bonds have requested that the interest thereon be paid semi-annually instead of annually, in accordance with the agreement dated Sept. 14 last. These bonds may be deposited on or after Nov. 6, with the payment of one per cent. of the par value of the bonds. (March 24, p. 219.)

BRADFORD CENTRAL.—Geo. A. Ricker has been appointed Chief Engineer of this company, whose road is now building. (RR. Construction column, Aug. 18, p. 588.)

CHATHAM & LEBANON VALLEY.—This company, recently incorporated as successor to the Lebanon Springs, has filed a mortgage for \$300,000. (Sept. 29, p. 686.)

CHICAGO & GRAND TRUNK.—In an official circular it is stated that floating debt has accumulated of \$1,991,300, for which the company has issued to the Grand Trunk its bonds secured by third mortgage. Additional capital of \$4,000,000 is urgently needed for double tracking, for additional equipment and for reducing gradients. To make provision for these requirements, and for meeting the first mortgage bonds which mature Jan. 1 next, a reorganization of the finances is required. This will require a friendly foreclosure of the first and

second mortgages and the organization of a new company to issue the following securities: \$15,000,000 of first mortgage 50-year 4 per cent. gold bonds, and \$6,000,000 of common stock. Of the bonds, \$563,000 is to be reserved for the Northwestern Grand Trunk prior lien bonds, maturing Jan. 1, 1900; \$5,437,000 for the first mortgage bonds falling due Jan. 1; \$4,500,000 in exchange for second mortgage bonds at the rate of \$750 for each \$1,000 bonds, and \$4,500,000 for the proposed improvements. The capital stock is to be issued to the Grand Trunk in repayment of its advances, and in full satisfaction of the floating debt. The Board of the Grand Trunk, which holds about one-quarter of the first mortgage bonds and one-half of the second, has assented to the proposition, and will further undertake to contribute toward any deficiency in the earnings to meet interest on the first mortgage 4's, an amount equal to 30 per cent. of its gross earnings on traffic interchange between the two companies. Holders of the first and second mortgage bonds are requested to deposit the same not later than Dec. 1, with Glyn, Mills, Currie & Co., 67 Lombard St., London, or with the Bank of Montreal, Montreal. Coupons due Jan. 1 on both first and second bonds are to be detached and paid at maturity. (Nov. 3, p. 770.)

CHICAGO & NORTH MICHIGAN.—This property, which has been operated for some years under lease by the Chicago & West Michigan, is reported sold to that company. It includes 92.61 miles of road.

DANSVILLE & MT. MORRIS.—At a meeting of the Stockholders R. H. England, E. P. Roberts and A. O. Bunnell were elected Directors.

FLINT & PERE MARQUETTE.—The meeting set for Nov. 2 to act on the transfer of the property to the new Pere Marquette Co. was postponed to Dec. 6. (Nov. 3, p. 770.)

HOCKING VALLEY.—Car trust series A bonds, of the Columbus, Hocking Valley & Toledo, to the amount of \$27,000, have been drawn for redemption at par and accrued interest, on Jan. 1, at the Atlantic Trust Co., New York.

HOOSAC TUNNEL & WILMINGTON.—Geo. F. Roberts has been appointed Assistant Superintendent.

HOUSTON & TEXAS CENTRAL.—One hundred first mortgage bonds have been called for payment at 110 and accrued interest, at the office of the company in New York City, interest to cease Dec. 31. (May 12, p. 345.)

HUTCHINSON & SOUTHERN.—The report is confirmed that this property has been taken under control by the Atchison, Topeka & Santa Fe. The property was turned over to the company at midnight, Oct. 31. (Nov. 3, p. 770.)

KANSAS CITY, ELDORADO & SOUTHERN.—This property was taken over by the Missouri, Kansas & Texas on Oct. 24, at 12.01 a. m., and is now being operated by that system. (Nov. 3, p. 770.)

KANSAS CITY, FORT SCOTT & MEMPHIS.—Proposals will be received up to Nov. 13 for the sale, not to exceed 110, of Kansas City, Fort Scott & Gulf first mortgage bonds sufficient to consume \$50,000. (Sept. 29, p. 686.)

KANSAS CITY, PITTSBURGH & GULF.—The Philadelphia and New York committees have reached an agreement as to reorganization. The understanding is that the new bonds will bear interest at 3 per cent. instead of 4 per cent., but the old bonds will receive 75 per cent. in new bonds, 50 per cent. in preferred stock and 2½ per cent. in cash. In the voting trust President Fitzgerald of the Mercantile Trust Co., and President Stillman of the National City Bank, take the place of President A. E. Stilwell and I. de Goetjen, Jr. (Nov. 3, p. 770.)

LOUISIANA & ARKANSAS.—The title of W. S. Mith has been changed from Traffic Manager to General Traffic Manager.

LOUISVILLE, EVANSVILLE & ST. LOUIS.—E. Holbrook has been appointed Chief Engineer and M. A. Zook Engineer Maintenance of Way.

NORTHEASTERN OF GEORGIA.—This property was sold Oct. 31 to a representative of the Southern Ry., for \$507,000. The upset price was \$287,000. It passed into the hands of the purchasing company at midnight that date. (Oct. 6, p. 702.)

PENNSYLVANIA.—Bids were asked up to Nov. 30 for the sale of as many of the company's 4½ per cent. collateral trust loan bonds as \$116,600 would purchase at the lowest prices not to exceed par. (May 5, p. 326.)

PERE MARQUETTE.—This company on Nov. 1 filed articles of association in Michigan as the parent company for a consolidation of the Flint & Pere Marquette, the Detroit, Grand Rapids & Western and the Chicago & West Michigan. The capital stock is \$28,000,000, of which \$12,000,000 is 4 per cent. preferred. The officers and directors are given under Elections and Appointments. (F. & P. M., June 2, p. 394.)

PITTSBURGH & WESTERN.—Wm. R. Blair, Special Master, notifies holders of claims, etc., against this company that the same must be filed at his office in Pittsburgh, Pa., on or before Jan. 1, 1900, and that a hearing is set for Nov. 11 at 10 a. m., as to any claim under this order. (Nov. 3, p. 770.)

PLANT SYSTEM.—Dr. R. L. Brydon has been appointed Acting Surgeon, Hospital Department, with headquarters at Waycross, Ga.

STATEN ISLAND RAPID TRANSIT.—Blair & Price, attorneys, at 80 Broadway, New York, request stockholders to communicate their addresses that united action may be taken for the protection of their interests in the reorganization. (Oct. 6, p. 702.)

UNION PACIFIC.—Judge Sanborn, at St. Paul, Minn., on Oct. 24 signed a final decree for the distribution to the unsecured creditors of the remaining assets of the old U. P. Co. This is \$6,103,217, or six per cent. of the face value of the claims allowed. In this distribution the United States receives \$821,897. (Nov. 3, p. 770.)

WASHINGTON & POTOMAC.—Press reports state that Chas. B. Collier and others have obtained control of this property, which runs from Brandywine to Mechanicsville, Md., 21 miles, and they propose to complete the road south to Point Lookout on Chesapeake Bay, and from Brandywine north to Washington, D. C., making a total length of 80 miles.

WISCASSET & QUEBEC.—A dispatch from Wiscasset, Me., states that a plan is on foot to consolidate this company with the Franklin, Somerset & Kennebec and the Waterville & Wiscasset. The Wiscasset & Quebec operates a line from Wiscasset, Me., north 43.5 miles to Albion, and is building north to Pittsfield, 18½ miles. The F. S. & K. has a partially completed line between Farmington and Attean. The W. & W. proposes to connect Weeks Mills with Waterville, 13.3 miles. Grading was suspended some months ago.

YORK SOUTHERN.—Warren F. Walworth, formerly President of the company, has filed his answer to the bill in equity seeking to compel him to transfer a controlling interest in the railroad to the Northern Central. He avers that the N. C. has repeatedly refused to carry out its agreement to buy 10,000 shares of the capital stock and \$144,000 of the bonds for \$160,000. He further holds that the sale of the property to the Northern Central will be illegal because the State Constitution forbids the consolidation of competing roads. (Sept. 9, 1898, p. 657.)

YOUGHIOGHENY.—This property, which extends from Irwin, Pa., south 10 miles to Gratztown on the Baltimore & Ohio, is reported sold to the Pennsylvania.

TRAFFIC.

Traffic Notes.

It is said that numerous vessels are now being released from the ore trade and that consequently the rates on grain from Chicago and from Duluth to Buffalo are falling. On Monday of this week the rate from Chicago was 2.75 cents a bushel on corn, and from Duluth the rate on wheat dropped to 4.25 cents.

A statement made before the New York Commerce Commission recently, to the effect that the differential of 1½ cents between New York and Baltimore on export grain rates had been abolished, appears to have been entirely unfounded, or, more probably, was a case of erroneous reporting. It does not appear that there has been any change in the export tariffs from the West to New York and Baltimore, as far as this differential is concerned, for nearly a year; so that if there has been anything done lately in the direction of equalizing the rates to the two ports, it must have been in the way of secret cutting; but there is nothing, aside from this reported statement at the New York hearing, which would indicate that secret cutting is now common. On the contrary, there is an entire absence of such reports.

A Toronto newspaper recently came out with an editorial article describing the difficulties under which grain shippers are now laboring owing to the unusual rush of business and the crowded condition of the elevators; and stating, among other things, that the Grand Trunk railroad used an unjustly large proportion of its freight cars in the through export grain traffic from Chicago. It was stated that shippers in Canada were deprived of their cars while the railroad company continued to do a large business from Chicago through to Montreal. But a press dispatch from Montreal this week reports the General Manager of the Grand Trunk as saying that two-thirds of the company's cars usually used on American lines have been transferred to Canada. The Grand Trunk, like all the large roads, is now unable to move anywhere near the whole of the freight offered for it. The reporter quotes similar expressions from officers of the Canadian Pacific.

A number of roads east of Chicago have lately taken up tickets purporting to have been issued by the Colorado Midland which proved to be counterfeit. The officers of the Colorado Midland discovered the fraud and sent a notice to the eastern roads, but not until some of the tickets had been honored and not until so much time had elapsed that it is now impossible to conjecture how many of the counterfeit tickets have been sold. Newspaper statements were published to the effect that these fraudulent tickets were printed on standard safety paper, but this is not so. The paper used, which is stone color on the face and orange on the back, a style well known everywhere, bears no resemblance to the "Perfect Safety Paper" which bears the watermark of the American Association of General Passenger and Ticket Agents and is officially approved by that Association. The paper used in the counterfeits is perfectly opaque and no watermark is visible.

Chicago Traffic Matters.

Chicago, Nov. 8, 1899.

After nearly two months of war the Chicago-Missouri River lines have made a peace agreement and the low rates that have been in effect in this territory as well as from St. Louis will be withdrawn Nov. 15. The one-way rate now in effect between here and Kansas City and Omaha is \$3.50. This will go up to the former regular tariff of \$12.50. Between St. Louis and Kansas City the advance will be from \$5 to \$7.50. Chicago-St. Paul territory is left untouched. The present one-way cut rate of \$7.50 is likely to remain in force until there is a prospect of the three outside lines coming into the Western Passenger Association. Several attempts have been made to get the executive officers of the Chicago-St. Paul lines together to consider this membership question, but each time the representative of one or more of the non-members has had an excuse for inability to attend.

The railroad commission of Wisconsin has ordered a reduction in freight rates from 193 points in that State to Milwaukee. The order affects grain more than any other class and the reductions directed run from nineteen to twenty-nine per cent. The rates from Wisconsin and other northwestern districts to Milwaukee and Chicago have been the same. This, the Wisconsin commission alleges, is a discrimination in favor of the larger port, and it is with a view of effecting the discrimination that the reduction is ordered. As yet no very strong feeling against the commission's action has been manifested by local officers of the northwestern lines; in fact, the Chicago & Northwestern company has notified the Wisconsin authorities that it will obey the order.

The old \$2 per car stock yards trackage charge is to be brought up again in the United States Court in this city. Attorneys for the Inter-State Commerce Commission will in a few days go before Judge Kohlsaat and apply for an order to compel the various railroads to desist from making the \$2 charge.